

# INFORMATION AGE

October/November 2004  
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## Shifting to Unified Security

**Customs' Major Makeover**  
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# ROHAN HAS THE EDGE DO YOU?

An ACS Member for over 14 years, Rohan David has been working with global multinational organizations comprising broad product portfolios including responsibility for the Due Diligence/IT integration of a newly acquired company for a leading food group. His initiatives have involved large cross disciplined teams where he has played many roles from Business Consulting to Project Management. Rohan became a CMACS in IT Strategy and Management in 1997.

## ACS Project Management Specialisation

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"The CMACS program subject content is compiled by industry experts and gave me up-to-date knowledge on trends, legal issues and strategic insights that complemented my work and I was able to leverage value from it. The program had a good choice of specialisations in addition to the core subjects of IT Trends and Business, Legal and Ethical Issues".

**Rohan was awarded Project Manager of the Year 2004 by the Project Management Institute (PMI) Australia.**

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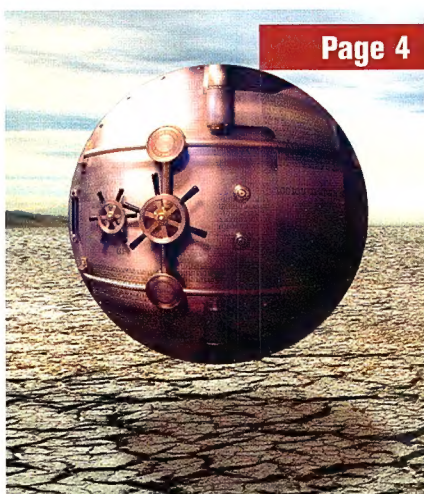


Australian Computer Society



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By Edward Mandla  
President, Australian Computer Society

# Creating policy with legs

**BY THE TIME** you read this column, the federal election will have been decided.

The good news is that, for the first time, I believe the Coalition, ALP and even the Greens are starting to understand the issues impacting our industry.

We've covered new ground this year; after polling members on whether the ACS should invest in lobbying government, 97 per cent say that is absolutely what we must do.

There are many advantages in coming from a zero base. We made a critical decision early that it was too late to influence the 2004 election. We decided to be forward thinking and create policy with legs that would influence the 2007 election.

was when we launched it in May, and continues to be quoted and referenced widely.

When I wrote this column, Labor was clearly articulating support for the ACS Offshoring Guidelines "as a useful and necessary test for Federal Government agencies and departments".

The Coalition also announced its strong support for best practice guides in this area, with Minister Coonan welcoming and encouraging the strong interest from industry in the ACS guidelines.

One of the great advantages of having policy with legs is that you can keep pointing people back to it and we've had plenty of opportunities to do just that.

higher quality work. We expect our policy initiatives to not only have strong implications for our own industry, but also enormous potential to be adopted by others.

Working more closely with government has been a learning exercise. I'm pleased that the ACS has daily dialogue with both sides of government, either directly with ministers or indirectly, through our advisers talking to theirs.


We decided to be solutions-oriented. This meant avoiding the temptation to criticise governments on everything, but rather seeking to understand their imperatives and be first in line to shape future thinking.

It's exciting; the more you work with government, the more you learn and the more you have to say, and our opinions are being sought. In turn, we can use public forums like the media to influence the agenda and drive debate.

The ACS media presence this year has been unprecedented and it is wonderful to hear from ACS members who are proud to see the ACS name consistently in the public domain.

Last month, ACS history was made with the first ever advertisements promoting our profession on television and on Qantas flights. It has been part of our vision to communicate what we do to ordinary Australians, encouraging them to be supportive of their children if they want to work in ICT.

Equally, it was time to communicate to corporate boards and their directors what our profession does. This is part of a strategy to start influencing large organisations to include ICT professionals on their boards to provide that vital ICT knowledge and vision to inform decisions.

Thanks for your support and encouragement for our ongoing efforts. I enjoyed meeting many of you at the recent ACS National Conference in Melbourne and always welcome your feedback. 

## Our industry offers tremendous rewards, yet it has a reputation of making its professionals work long hours in relative isolation

Creating policy with legs means getting the best brains into a room and expecting that they will do no work beyond that meeting. We have policy writers, facilitators and economists available to sketch out quickly what is and what isn't possible.

We then take the ideas to the membership for critical review, inviting feedback and opinions from a wide range of sources.

I think our first example of policy with legs was Offshoring. Without doubt, this is one of the most complex and controversial topics in our industry, prompting an emotional response from many.

The ACS represents members who work for offshoring companies and members who are making decisions to displace fellow Australians, while other members have lost their jobs because of offshoring, yet, through this minefield, our policy is as fresh today as it

Stand by for several new policy initiatives from the ACS, including one on work/life issues. When the ACS staged a cocktail party at Parliament House last May, the then minister congratulated the Society for taking the initiative in this policy area, commenting that the Prime Minister was interested in seeing the outcome.

Our industry offers tremendous rewards, yet it has a reputation of making its professionals work long hours in relative isolation.

Our daily job is to shape business practices to make them more productive. We now need to shape our own industry to ensure we can keep existing workers challenged and happy, while being attractive to prospective ones.

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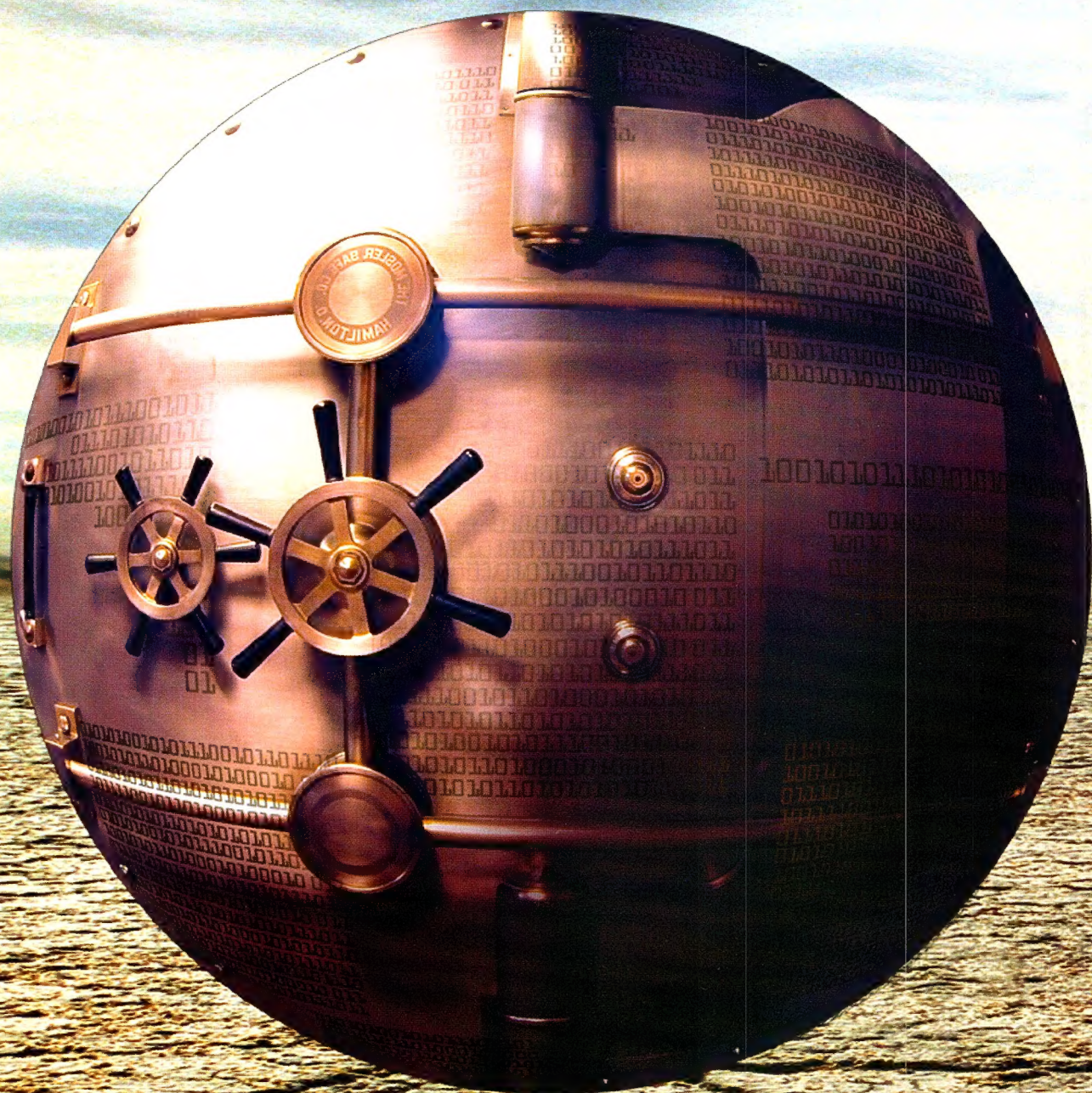


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Shift toward  
**UNIFIED**





## Centralised control becomes key as physical access systems merge with IT infrastructure

**WHEN DELAWARE STATE UNIVERSITY** took a hard look at its campus-wide security systems in the late 1990s, it didn't like what it saw. The school's 1800 students used multiple passwords for various campus IT systems. They carried a mish-mash of identity and access cards for the library, residence halls, bookstore and cafeteria. According to CIO and Assistant Provost Dr Charles Fletcher Jr, "We were experiencing difficulty with keys and significant theft."

School officials set out to unite the university's multiple physical and IT security systems with a single, campus-wide access card, which could be centrally administered and monitored. So in 2002, working with Siemens, Delaware State launched the DSU Smart Card, incorporating a picture ID, barcode, magnetic stripe, RF (radio frequency) antenna and microprocessor to manage student access to the campus's diverse physical and IT infrastructure.

Fletcher claims theft is down almost 20 per cent and says the unified system makes it easy to trip alarms and immediately cut off access to buildings or networks.

Welcome to the world of converged enterprise security. By linking physical access systems to IT security systems, organisations are laying the groundwork to ensure that the two systems work in concert, controlling access and fending off attacks, while providing greater efficiency in user provisioning and authentication.

# SECURITY

## emerges

By David Margulius



## "The No. 1 reason for interest in merging physical and IT security systems is provisioning"

Vendors such as Siemens and Computer Associates already offer systems that monitor and correlate data from both physical and IT security sources. Although adoption in the enterprise is still in the early stages, it's growing steadily behind the scenes, particularly at large financial services companies and in government, health-care, communications, and intellectual-property-intensive industries.

Not only will the resulting converged systems make legitimate access easier, they will also dramatically raise the level of security intelligence by correlating physical and virtual data in real time to detect threats. These systems may sound an alarm when your machine is in use but you're not physically in the building. They may lock you out if you try to enter two buildings 150km apart in under an hour. They may automatically delete data on mobile devices that stray

outside of a certain perimeter and are thereby deemed stolen. And they will be sure to log suspicious behavior for future analysis and potential prosecution.

"Previously this was just a dream," says Erik Layton, senior investigator at Pinkerton's worldwide IT practice group. "If you can integrate the identification of potential anomalous behavior, you're going to have a much more integrated approach to responding to risk, [resulting in] an exponential increase in enterprises' ability to thwart attack," he says.

### Authentication: The enterprise-wide credential

A key building block of the converged security vision — and one of its biggest benefits — is the ability to give employees a single enterprise-wide credential they can use for both online and physical access. Having one

credential would provide convenience to users and would make it easier to centrally provision and administer user identities and authentication.

"The No. 1 reason for interest in merging physical and IT security systems is provisioning," says Eric Maurice, director of eTrust Security Management at Computer Associates International. In most enterprises, these disparate systems don't talk to each other, he adds.

Such an enterprise-wide credential can take the form of a smart card or a combination of a smart card plus biometrics, explains Sun's director of Java Card Business, Peter Cattaneo. "I can now write a Java smart card applet, which can talk to my door or log in over the network. When you show up at a door, it just opens and your session is ready on the computer."

But the devil is in the details because of an immature but quickly evolving set of authentication technologies and the difficulty of getting large organisations to develop unified processes to make sure a person is who their credential says they are.

Enterprises must make trade-offs, for

## Biometrics move into the mix

As physical and IT security converges, biometric devices, which measure human characteristics such as fingerprints or retinas, have so far failed to win a role as stand-alone authentication credentials due to their perceived vulnerabilities. They are, however, gaining traction as a supplement to smart cards and passwords, which thieves can steal or falsify to gain unauthorised access to physical facilities and IT systems.

Biometrics offer advantages over smart cards in terms of convenience, says Novell Security Czar Ed Reed. "It's easier to reach up and grab a fingerprint pad than to remove a smart card from a badge and slide it through a reader," he explains, noting that companies are increasingly using biometric authentication to supplement smart cards in sensitive network environments.

But individual biometric techniques such as palm, iris, and fingerprint scans have their weaknesses, not least of which is the relative ease of spoofing. "You can make a gelatin mould of a fingerprint and use it to fool a fingerprint reader under certain circumstances," explains Richard Hunter, research director at Gartner.

"None of this stuff is private. It's not a secret," agrees Sun director of Java Card Business Peter Cattaneo. He notes that the simplest way to beat biometric authentication is to "get

a digital copy (of the biometric) and inject it into the network behind the sensor".

Gartner's Hunter says another issue with biometrics is they may only work well under controlled conditions. Facial geometry scans, for example, can be done at a distance but only at certain angles of approach and lighting levels. Hunter also points out that for most biometric systems to work, a person's data must already be accurately entered into the database.

"That question shows up in almost any authentication scheme: Can you be sure the authentication is issued based on accurate data?" Hunter explains.

Hunter expects biometrics to lag behind smart cards for enterprise authentication, except in high-security facilities, until a couple of high-profile government biometrics projects — such as the recently announced \$US10 billion US-Visit border security program — provide proof of concept and scalability.

Biometrics are expected to eventually live up to their long-awaited promise as the third pillar of the ultimate identity test: "something you have, something you know, something you are". Ultimately, biometrics will be one of the most powerful and secure authentication credentials, experts say, but only in conjunction with other methods. "It won't be enough to just say: 'Here's my fingerprint. Let me in,'" Novell's Reed says.





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## Best practices for unified security

**When considering deployment of a converged physical and IT security system, enterprises should consider advice from industry experts.**

- Have a clear, strategic plan — including goals and expectations for deployment — developed with broad participation from multiple constituencies.
- Develop a clear set of corporate policies — monitoring, privacy, response, archiving, and so on — to guide your deployment.
- Have an enterprisewide process in place, not just the technology, to handle identity and credential management.
- Clearly define the process for how the IT security and physical security teams will work together on incident response.
- Make conscious trade-offs between user convenience and authentication strength, matching the level of security with the level of risk. Use multifactor authentication where possible.
- Use your chosen authentication methods, such as smart cards, across as many applications as possible to get the maximum cost leverage.
- Centralise credential management and identity provisioning. Link the identity management system to your HR systems.
- Make sure all new physical security infrastructure complies with standards and IP protocols.
- Build a long-term business case for deployment, and structure long-term vendor contracts, including maintenance and upgrades.

example, between strong multifactor authentication and usability. Biometric authentication methods such as fingerprint analysis are growing in popularity but have several issues (see *Biometrics move into the mix*, page 6). Smart cards, which can combine legacy methods such as a magnetic stripe with stronger authentication on a microchip, are still costly, largely unstandardised, and can be stolen if left lying around. Other technologies such as RFID (RF identification) and GPS (Global Positioning System) are just emerging as potential players in the authentication process.

"It's nice that people have so many different choices of so many different technologies to experiment with right now," says Novell Security Czar Ed Reed. But he also points to inherent challenges when large enterprises deploy dual-purpose smart cards that enable both online identity authentication and physical access.

"There's a disconnect if you have to take your smart card out and put it in a card reader, and you then have to get up and go to the bathroom," Reed notes. "If

you don't have to have the card to go to the bathroom, you're susceptible to leaving the card at the workstation, and now you've just blown the whole purpose. It's got to be more like your keys — you don't leave the office without your keys because you can't drive away if you don't. Coming up with solutions to those types of issues is where the rubber meets the road with these integration efforts."

Organisational roles are another issue. Can enterprises make their centralised or federated credential management, role-based provisioning, and de-provisioning operable? "The technology isn't the biggest part of the problem," says Richard Hunter, research director at Gartner. "It's setting up the mechanism to gather the data — and [having] the personnel to manage the systems and the databases."

And finally, making integration investments pay off requires wholesale adoption, explains John McKeon, a business development executive at IBM Global Services. "The ROI is typically not just in physical access or network access. [It involves] incorporating

biometrics as a strong authentication technology across a number of systems or smart cards — not just with security apps, but with other business apps, such as payment, loyalty, vending, cafeteria, employee benefits, and parking", he says.

### Monitoring and correlation

After an enterprise-wide credential is in place, the heart of the converged security vision will be the ability to correlate and analyse physical and IT security data in real time and to take action based on that data to prevent unauthorised events and attacks.

Pinkerton's Erik Layton, who also runs online security, tells of a recent incident at a large company where a coordinated approach could have averted millions of dollars of losses.

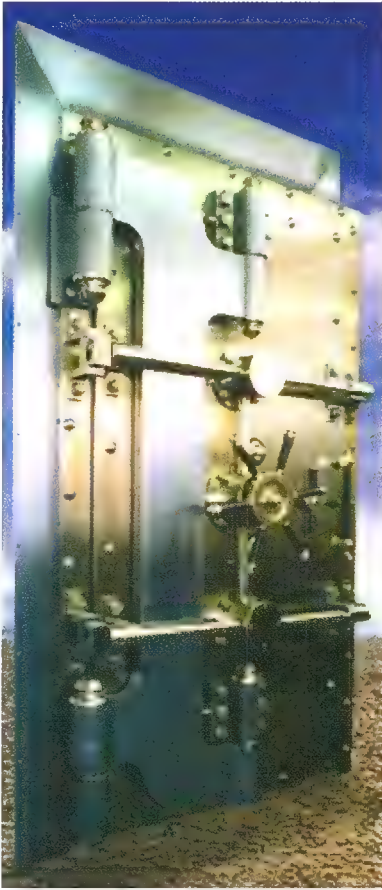
"We had a case where an organisation was attacked by an external distributed denial of service attack," Layton recalls. "Simultaneous with the DDoS attack, there was a physical theft of intellectual property within the organisation — multiple millions of dollars worth of customer information and critical plans for future development. The net result of the investigation was that the success of the theft was in large measure because the IT security staff's eye was taken off the ball by trying to prevent the DDoS attack."

Layton believes that if the right rules had been in place across a converged IT and physical security system, the organisation could have thwarted the property theft by shutting down physical access to certain critical systems when the external servers came under attack. "Where these types of monitoring systems will have the most impact is handling internal risk," he asserts.

Mark Cherry, product development manager at Honeywell International, agrees. "Access control will typically help a customer keep people segregated from areas, based on their work roles."

Before an organisation can implement a system to monitor and respond to the actions of its employees, it must develop an acceptable set of policies to be scripted into a rules engine governing data collection, activity-pattern analysis, anomaly detection, and archiving. As with most security systems, converged systems will do only what the corporate policy rule book tells them to do. The issue of how to respond to incidents, for





example, is always tricky. A converged system might execute certain automatic responses to an apparent combined physical and cyber threat, such as recording a video clip for later review.

But Glenn McGonnigle, CEO of VistaScape, a video surveillance software company, says that most incidents still require a policy-driven escalation process involving human beings.

"Several years ago, we had systems that could respond to an attack by dropping a connection or shutting off a firewall," McGonnigle says. "But customers weren't ready for that. They didn't want those systems to take that action without oversight."

### Connecting the physical systems

All the benefits of converged security — more convenient authentication, more efficient provisioning, and better threat detection — assume that an enterprise's physical access systems are IP-enabled and can share data across a network, which is not always the case. Devices such as locks, badge readers, and surveillance cameras have traditionally run on proprietary legacy networks and protocols and are hardly

ever upgraded. This has begun to change as enterprises look to economise by sharing digital infrastructures.

"The industry is going more and more to open protocols because customers want to be able to share data at enterprise levels across the organisation," Honeywell's Cherry says. Although physical access systems increasingly use common protocols such as LDAP or SQL database back end, their administrative software dashboards, called panels, are still largely proprietary and don't easily interconnect with other systems.

"The biggest challenge really is the lack of standards. The panel manufacturers are not working together," says CA's Maurice, who is also executive director of Open Security Exchange (OSE), an industry group formed to develop common APIs for physical-systems functions, including user provisioning and privilege management. OSE is working with the Security Industry Association, which is launching a Data Modeling for Access Control workgroup to address similar issues. "I think we are a year away at least from getting such a standard," Maurice says.

Another challenge is that when a

## Merged security prompts privacy fears

In George Orwell's classic novel, *1984*, surveillance devices constantly monitor the citizens of Oceania, and Big Brother controls their movements. Orwell may have missed his target by about 20 years, but parts of his ominous vision are imminently more possible now that physical and IT security systems are merging.

Consider the network-connected door lock, which grants employees entry based on their identity or behaviour according to policies that reside in a rules engine. That same door lock in theory could keep a person locked inside — say, until the end of his or her shift. Or consider biometric sensors and surveillance cameras, which can track your every move inside a building and develop a composite picture of your behaviour, including your online activity.

Extreme? Maybe, but many questions remain as to how converged systems and the data they generate will be used. Few companies are willing to speak publicly about deployments of converged physical and IT security systems, says Eric Maurice, director of eTrust security management at Computer Associates. "They're concerned about the perception the system will create with their own employees — the fear that this kind of tool will be used to monitor everybody in real time."

Mark Cherry, global product development manager of Honeywell's Enterprise Building Integrator product, says privacy

issues are a moving target linked to public sentiment and legislation. "You're always dealing with the civil liberties aspects of this," he says, noting that companies in some Scandinavian countries must, by law, expunge data on employees' access activities within 30 days.

In the United States, privacy advocates backed off some of their demands in the wake of Sept. 11. "But as time passes, the more relaxed people will become (about security measures). We're already seeing it," Cherry adds. He notes that some businesses, such as pharmaceutical and health-care companies, are required by regulators to collect information about employee activities. But at many companies, monitoring is not viewed as crucial. "If you're in a warehouse pushing out paper, you probably don't need to track everywhere John has been," he says.

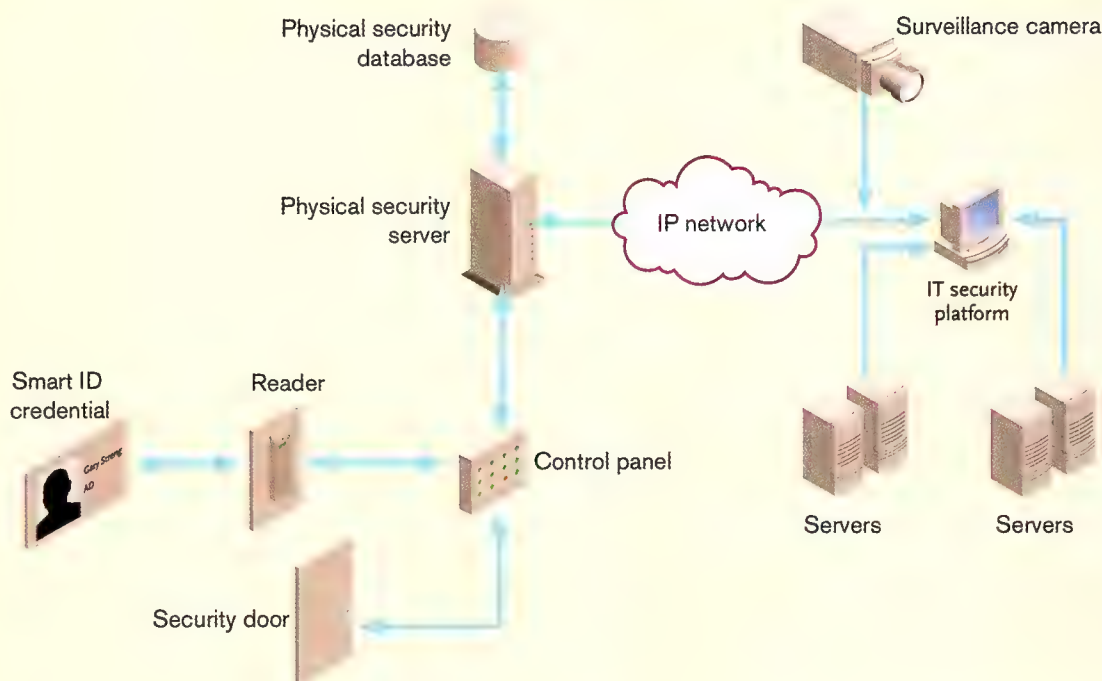
Other approaches to protecting employee privacy include keeping biometric data on a smart card as a private key rather than in a central database and carefully limiting access to certain data.

At Delaware State University, for example, in addition to having strong, publicly posted privacy policies, the IT department does not have access to data about students' physical movements around campus, explains Dr Charles Fletcher Jr, the university's CIO. "We try to keep that separate," he explains. "That makes good auditing policy."



## Control and convergence

The traditional boundaries between physical security and IT security infrastructures are being blurred as a result of the adoption of IP-based security products such as surveillance cameras, and the growing introduction of network-enabled physical access control systems.



physical access system has been IP-enabled, it becomes more vulnerable. "These systems become vulnerable to identity spoofing and session hijacking," Maurice notes. "A bad guy can remotely monitor your location by using your own camera, and you will not know." And in one recent case, he adds, an upgraded physical-access system running Microsoft's SQL database on the back end became infected with SQL Slammer, partially shutting down the system and preventing administrators from adding or de-provisioning users.

### Bridging the cultural divide

A final piece of the converged security puzzle involves getting IT and physical security personnel — who often have different perspectives, priorities, and reporting relationships — to work well together. "The guy tasked with catching a hacker has a different skill set than the guy tasked with catching a guy climbing a fence," VistaScope's McGonnigle notes.


"The primary function of IT security is to make sure the system works, keeping the system up and running," CA's Maurice says. "Whereas the physical security guys say we need to maintain the chain of evidence, we can't use this computer any more. On the one hand, you have people who deal with cheaters and thieves and physical danger, and on the other hand, you have young propeller heads."

This power struggle has not played out yet. "Neither side wants to give up ownership and management of identity," Novell's Reed says. "There are politics involved, having to do with who's authoritative and whom the various [departments] of the organisation trust to feed them update information."

But VistaScope's McGonnigle thinks both sides are gaining the other's respect as they increasingly share the same infrastructure and become more reliant on each other. Honeywell's Cherry agrees, noting that IT staff must rely on security personnel to

safeguard their own physical infrastructure. "Somebody going in and throwing a wireless LAN device into a wiring closet is a security manager's worst nightmare."

Whether and how soon the vision of converged physical and online security systems will become reality at most large enterprises remains to be seen. But today, key building blocks are falling into place, advancing the vision, from smart cards and correlation software to IP-enabled access systems and surveillance devices.

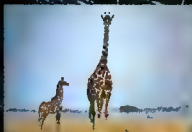
As DSU's Fletcher notes, however, one thing is unlikely to change in a converged security world. "There's no perfect system." IT managers should set their expectations accordingly. He also emphasises the importance of having trained, competent staff on both sides of the house involved in a converged security project from start to finish. "You don't want to outsource this," he insists. "You need people who are committed to your corporate plan. They must have some skin in the game." 



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# Digital EYES and EARS



**IP surveillance systems keep  
watch while you're away**

By Oliver Rist and Brian Chee

**LEVERAGING YOUR EXISTING NETWORK** to act as a security system is certainly cost-beneficial, from both the hardware and staffing perspective. But it's also a way to beef up security. IP video-surveillance systems offer features far more advanced than what you can get from standard analog CCTV (closed circuit TV). It's no wonder these systems are becoming increasingly popular in the enterprise.

We recently put two IP surveillance management systems to the test: Axis Communications AB's ACS (Axis Camera Station) is a functional yet low-cost camera management system, whereas On-Net Surveillance Systems' NetDVR-64 clearly represents the high end of this market, boasting an amazing set of features and a price to match. Our tests brought to light several important factors for

you to consider when choosing and implementing a surveillance management system.

First, you will need high-performance hardware. Although fairly heavily muscled, the test machines we used in this review were often put under severe disk and CPU strain when performing advanced functions such as date-and-time-based searching.

Second, you will need plenty of storage. Even when we only recorded events at a rate of just 10 frames per second (a low frame rate that still provides image quality high enough for facial recognition even at a dead run), we stored more than 1.5GB of data per camera per day. Multiply that by 100 cameras, and the storage requirements for recording 24/7 would quickly eat you out of house and home. Configuring cameras to transmit live images at a constant rate while

recording only a small number of images can save lots of disk space.

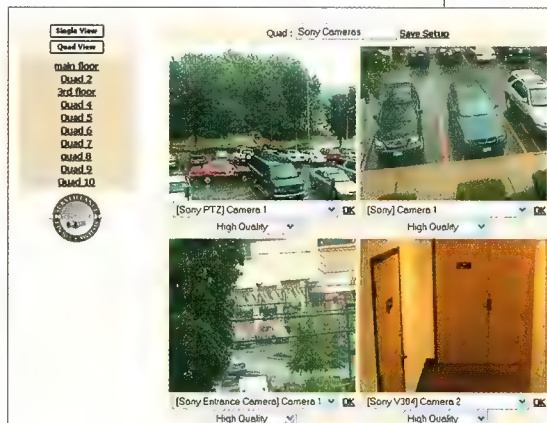
A third thing to keep in mind is the security of the camera itself. Password protection is important, but so is defending these appliances against network threats. Wireless cameras are especially vulnerable to DoS attacks, and relatively few camera manufacturers have taken this into account.

## **Axis Camera Station**

Axis Communications sent us its ACS 1.0 software package and two cameras, the tiny but powerful Axis 205 and the full-featured Axis 210. ACS is designed to run as many as 25 Axis cameras from a single management or surveillance console.

We installed ACS on a Hewlett-Packard workstation equipped with a 2.4GHz





**NetDVR-64's Web console allows remote users to click among camera views; control pans, tilts, and zooms; and view live or recorded video**

Intel Pentium 4 CPU, 512MB of RAM, and a video subsystem centred on 128MB of dedicated video memory. The system was running Windows XP with .Net installed, as ACS requires. Your initial ACS licence will cover 10 cameras, but additional cameras can be added in single- or five-camera increments.

ACS is capable of scanning any single range of IP addresses or a full subnet in search of cameras to manage. In our case, we had it scan three different class-C subnets. ACS first uses a simple ping to find IP addresses that are active and then performs a more intensive scan for video cameras culled from that subset. This works fine, but to keep it working, you can't have ICMP (Internet Control Message Protocol) ping filters between you and your cameras. The upside is that you don't need static IP addresses on your cameras, just on the ACS console.

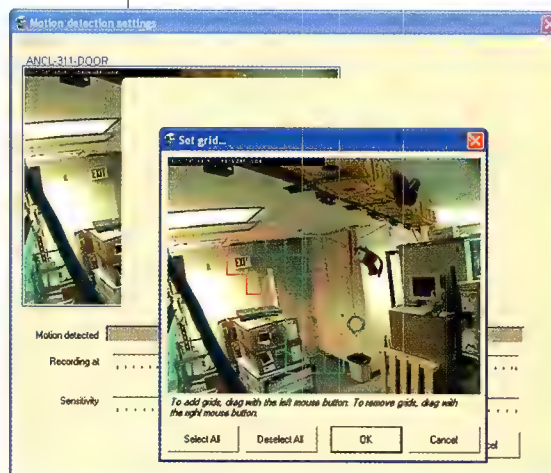
One of the things we liked about ACS is that it doesn't require cameras to support motion detection. All you need is an active camera, and ACS will allow you to set desired motion-detection areas using on-screen squares; you simply place them over

those portions of the image where you want to detect movement. You can also detect motion using IR (infrared) sensors placed around the room, allowing the camera to follow someone walking through the room by keying on each IR device.

ACS' playback feature is also nicely equipped. The user interface is identical to the monitor view and is capable of doing video playback on multiple cameras simultaneously after a short disk-access delay. Although our HP workstation is fast, we might have improved performance by installing faster disk drives.

Video is searchable by date and time and can be accessed on a single- or multiple-camera basis. In multiple-camera mode, a search will automatically sync all the camera views to the specified date and time — very handy in forensic investigation. A word of caution: Each camera maintains its own time clock for this purpose, so having an accurate NTP (Network Time Protocol) server available on the LAN is a must for accurate searching.

If we have a complaint about ACS, it would have to be performance. The HP workstation we were using is well beyond



**Axis Camera Station can detect motion within specified areas of an image and lets you set thresholds for alerts and recording**

Axis' suggested configuration, yet when we asked for a particular camera's view, ACS would sometimes take as long as several minutes before the new window would appear on the screen. More importantly, video searching is extremely CPU-intensive, and it sucked up nearly 100 per cent of our CPU capacity despite the fact that we were running a CPU twice as fast as the one recommended by Axis.

Although we expected compatibility issues, it was nevertheless disappointing to learn that ACS will only work with Axis' cameras — and then only those that run firmware Release 2.34 or later. Being able to drop ACS onto an existing cadre of IP cameras would have been great, but if you're designing an IP surveillance system from the ground up, this limitation doesn't mean much.

### On-Net's NetDVR-64

NetDVR competes at the high end of the camera management market. Its advantages over ACS start with hardware independence. NetDVR supports several IP camera platforms as well as analog CCTV cameras, a feature that will clearly ease the migration burden from an older security system.

NetDVR also supports a multiple-display monitor system on the installed console, although we feel sure we could make ACS support this feature as well. NetDVR provides as many as 64 recording channels per console, whereas ACS tops out at 25. NetDVR also has ACS beat hands down for ease of searching and basic organisation.

**In multiple-camera mode, a search will automatically sync all the camera views to the specified date and time — very handy in forensic investigation**



# Swiss-army security camera

**IMobotix M10 has features to burn but doesn't play well with others**

The Mobotix M10 is the Rolls-Royce of IP surveillance cameras. From the high-quality stainless steel mounting brackets to its expansive internal software support, the M10 is a high-end surveillance junkie's dream. However, until third-party management console vendors support Mobotix cameras (On-Net Surveillance Systems plans to do so), the M10 will remain suitable only in scenarios that require a limited number of cameras.

The M10 was originally designed for European ISDN links. Alas, some of its coolest features — such as audio monitoring during an alarm and even telephony capabilities, thanks to a built-in speaker and microphone — work only via ISDN. (We were also unable to get the M10 to work with a “standard” power-over-Ethernet switch.) Still, the M10 demonstrated a respectable arsenal of features that we were able to implement without an ISDN connection.

Most impressive is the M10's vast array of triggers and events, including IR (infrared) received from any standard IR remote control; IP-based triggers on any TCP port; serial triggers through data logging and string comparisons; light-, noise-, and temperature-level triggers; video motion in a specific area of the camera view; and even a passive IR detector built into the unit.

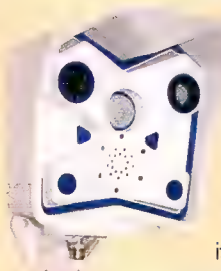
In short, getting past this camera is a job for Impossible Missions Force. And if the built-in triggers aren't enough for you, remember that this camera runs embedded Linux, which

means there's a programming interface you can use to create custom triggers.

The biggest issue in an event-triggering scenario is sorting through the mass of video that gets stored on your server. To make this job easier, the M10 can modify the images saved during a triggered event by changing the frame colour, inserting an alarm icon into the frame, adding colour bars to the top or bottom of the screen, or adding a coloured ball to the screen's corner — whatever works to bring that set of frames to your attention when you are reviewing the video.

In addition, when an event occurs, the camera can trigger a circuit for a specified number of seconds or minutes (read: sound a siren), or it can trigger multiple FTP sessions to primary and secondary FTP sites. Or it can trigger both. And of course, it will send an alert e-mail as well. While we're on the subject, the M10 can actually play recorded sound files as your alert message; these alerts can also be called in through the ISDN phone line. Plus, you're not restricted to a single message setup, meaning the system is designed not only to phone the police but to contact you as well.

Frankly, we loved the Mobotix M10. Its only shortcomings are that it's too reliant on ISDN connectivity and that it isn't supported by NetDVR and other camera-management consoles. Until a compatible management console comes along, the Mobotix M10 will be a monster to configure in a high-density implementation.



Whereas ACS provides simply a list of cameras with user-defined names of their locations, NetDVR can be integrated with a floor map of your building, allowing users to click through each floor and select individual cameras on a point-and-click basis. From here, users can search through an individual camera's log for past events or saved video. Even sweeter, the alarm system can bring up events in a hierarchical structure of a NetDVR installation, allowing a single security officer to monitor multiple sites from a single console.

Searching with NetDVR was noticeably faster than with ACS, probably because NetDVR places all recorded video into a database. This allows not only for faster date-and-time searches but also for NetDVR's search feature to be integrated with other applications, such as a point-of-sale system. This would allow you to sync image searches with specific cash register transactions or click on a particular transaction and find the appropriate video slice.


Other add-ons include the ability to integrate in the iPix video enhancement software, which allows you to store a 360-degree view from a single camera — handy for both surveillance and Web presentations.

NetDVR is an expansive product that cannot be done full justice in this small space. The company has put much thought and effort into making this system a viable replacement for traditional analog video-surveillance systems without forcing a forklift upgrade to IP-based cameras all at once.

Because this system integrates so well with various types of video systems — through the use of either Axis or Sony camera servers — it allows you to move gradually from analog video cameras to high-resolution IP cameras. Given its feature set and broad compatibility base, NetDVR may be most folks' best choice, unless you're opting for an all-Axis solution right off the bat.

ACS' software has an advantage over NetDVR in that it can scan a specified subnet for cameras, thus handling DHCP

better than NetDVR does. But because this capability is limited to Axis cameras, the advantage is not a big one. Furthermore, ACS is based on ActiveX and thus suffers from bloated DLL-swapping syndrome, resulting in window changes and button clicks that feel slow even on respectable hardware. Running on the same machine and using the same cameras, NetDVR was snappy by comparison.

Finally, although ACS is the clear winner on price at \$99 per camera, which is about one-third the cost of NetDVR, ACS provides limited scalability. NetDVR supports much larger installations, and because it can handle most (but not all) popular high-end IP cameras, it gives customers more flexibility in designing their IP surveillance systems. 

*Oliver Rist is a senior contributing editor of InfoWorld. Brian Chee is associate director and founder of the Advanced Network Computing Laboratory at the University of Hawaii's Department of Information and Computer Sciences.*



# CROSS-EYED SURVEILLANCE SYSTEM



## sets **WORLD SECURITY** benchmark

**An Australian-developed three-dimensional video detection system has taken automated surveillance to new levels of control and sensitivity**

**UNIQUE AUSTRALIAN** surveillance technology which uses three-dimensional video coverage has been adopted to secure Malaysian prisons and is gaining acceptance for industrial, defence and commercial security here and abroad.

Developed by Sydney-based Practel, already established as a builder of analog and digital broadcasting technology, its 3D Sense-Eye system uses two or more cameras operating together to give almost infinite security control over an object or area.

As traditional two-dimensional CCTV systems protect an area by placing a detection grid over it, movement in front or behind the area can trigger false or nuisance alarms when a single camera detects intrusion into its viewed area. Customers getting between a chemist shop camera and grid-protected drugs on a shelf can set alarms off, however innocently.

Sense-Eye's world-patented multiple camera system also uses a user-drawn detection grid, but its virtual width and depth perception created by two or more camera views alert administrators only when a secured object is actually touched. Forklifts



**Look, but don't touch; detection grids can be prioritised for any object.**

for example can move around an object in a warehouse without triggering an alarm.

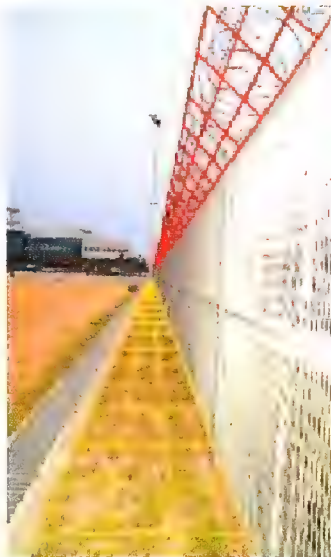
Shoplifters intent on stealing drugs will raise no alarm until they reach out to grab them: Sense-Eye's second camera, watching along an axis at 90deg to the first, will detect the reaching and create an alert.

Typically, the Sense-Eye system will link

eight or 16 cameras on a TCP/IP LAN via Practel's Zenith control system to a standard PC running Windows 2000 or XP. Practel's software will display either single or multiple images as stills or video, its algorithms combining data from any of its multiple cameras to create an alert when there's movement in any detection zone.



**“Someone gazing at a dozen monitors connected to single cameras will start to miss security breaches after about 20 minutes on the job; there’s just too much to look at and efficiency rapidly falls**



Intrusion detection sensitivity can be set by Sense-Eye’s administrator (above), and its two-camera set-up will detect intrusion, along, over or behind a fence.

Depending on the placement of the cameras, an almost infinite level of detection can be created. Using a mouse, the operator draws a detection grid over secured objects, or a simple don’t-cross line, on the PC’s monitor and sets a number of parameters.

Priority can be given to secured objects or areas by ascribing one of 16 colours to its detection grid, the number of cameras devoted to each, how many of them need to detect motion to raise an alarm, and the speed and size of any target.

Grids can be drawn and light sensitivity set to compensate for moving shadows as the sun crosses the sky, wind-driven camera movement and weather conditions. Cameras sample lighting condition several times a second and automatically adjust to changes.

The speed/size function, combined with pre-set time schedules for each secured area, allows administrators to configure the system to significantly reduce the number of false or nuisance alarms: People, cars or forklifts may be allowed to enter a warehouse, but something bigger like a truck will trigger an alarm.

Any movement by any object at times when none should be expected will also ring bells. Similarly, small objects like birds flying through a detection zone can pass without alarm, but anything bigger than a rabbit approaching a security fence line, or moving along it, will raise an alert.

The multiple-camera set-up allows an operator to see whether a target is inside or outside a fence and whether they have touched it or are trying to dig under it.

This feature is useful on railway platforms where a no-go grid can be put along its edge. Passengers getting too close to the tracks will trigger an alert, but putting, say, a briefcase in it may not.

Alerts can be flagged on-screen but can also trigger a public announcement recorded



as a Windows .wav file which will warn intruders to stand back. In an art gallery, individual pictures can have grids drawn across them to be watched by cameras at each corner of the room, while three or four cameras may home in on a free-standing sculpture.

Touching the sculpture may be allowed, but hug it as if trying to lift it and its custodians will know. Electrical engineer Nenad Radoman, Practel’s CEO, says the system’s high levels of automation are designed to compensate for fatigue, leading to attention lapses, in security operators:

“Someone gazing at a dozen monitors connected to single cameras will start to miss security breaches after about 20 minutes on the job; there’s just too much to look at and efficiency rapidly falls. With Sense-Eye generating its alerts automatically, operators can concentrate on them as they occur, and because of the simple networking protocols used, unmanned remote sites can be monitored on a laptop with Web connections in a hotel room if need be.”

Sense-Eye can be deployed as a stand-alone system, in addition to any pre-installed analog or digital surveillance set-up, or integrated with it. “Sense-Eye doesn’t care what cameras it uses or what kind of network it has to connect to; it can handle mono or colour images whether analog or digital, standard, infrared or light-enhanced — and will store time-coded data on its own hard drive or on any external server.”

Practel has a sales office on Sydney’s northern beaches, and its R&D and customising facility in Adelaide. Further information at [www.practel.com.au](http://www.practel.com.au) 



# Protecting critical INFRASTRUCTURE



By Allen Fleckner

Terrorism is forcing private sector security awareness

**FOR DECADES** Australia has, through a mix of isolation and good fortune, been able to avoid the destruction that terrorism can inflict on society. Now, however, with the threat very much a reality, what message must we send to the masters of the bomb and bullet? From critical infrastructure operators the message must be clear, and convey a statement to terrorists that the business sector is determined and prepared to counter their efforts.

With the introduction across all states and territories of new legislation to protect against terrorism, there is now a specific compliance requirement that must be met, demanding operators provide measures to both minimise the likelihood of a terrorist incident, and mitigate the resultant damage should such an event occur.

Under the terms of the National Counter Terrorism Agreement, Victoria alone has identified and developed a database of more than 600 items of critical infrastructure.

The operators of these assets, having been declared *Essential Service Providers*, are then deemed to require the development of a risk management plan, the main objectives of which are: to *prevent* terrorist acts in relation to the declared essential service, to *mitigate* the effects of a terrorist act, to *recover* the service from a terrorist act, and to ensure *continuity* of the service at all times.

What are the ramifications for those responsible for security within such facilities? With high-profile or trophy buildings often presenting more probable targets, both physical and cyber security has an increased duty of care to address potential security lapses

and weaknesses. Managers must examine and consider the nature and the likelihood of a terrorist incident either in their facility, or close by, and take steps to defend against the risks and consequences of such attack.

Failure to discharge this duty will leave the company exposed to legal liability, but equally as damning for the business will be the anatomy of blame that follows. This is the resultant expectation that the company should have foreseen the risk, and prepared itself to deal with it. If management wasn't prepared and thus couldn't respond effectively, or effected decisions that worsened the outcome, corporate governance culpability could readily arise.

Another emerging legal theory, 'negligent failure to plan', can find employers negligent if they do not take reasonable steps to eliminate or diminish known or reasonably foreseeable risks that could cause harm. Following recent terrorist spectacles, the range of known hazards is widely perceived to have broadened. In fact, all kinds of incidents that could affect an organisation should be considered, and the organisation itself needs to be able to anticipate elevated degrees of danger in order to step up their level of preparedness through suitable response planning.

With increasing private sector ownership and management of utilities and essential services, governments are developing a coordinated approach to the protection of critical infrastructure. A policy of nurturing risk management and cooperative planning within the private sector, which integrates disaster recovery planning and business continuity planning, is their preferred methodology.

The thrust of this campaign is to place the onus with the private operator and adapt an overseeing role for the assigned government agency to ensure appropriate best practice is met, and benchmark security standards reached.

In these circumstances, critical infrastructure security managers need to merge the organisational and functional elements for both IT security and physical security to establish an effective systems security program to provide functional asset protection. However these two areas are often at different poles within the business process. Knowledge gaps often exist that allow inherent weaknesses to flourish within the company. Organisational size often dictates that both of these elements are represented as a "clip on" function to other departments such as HR or OH & S. It is important therefore that organisations establish and appoint one person with the ability to speak for both areas. Lines of communication need to be established directly to the upper echelon of corporate management and the support of senior executives secured. Without this level of support, security culture improvements would flounder.

To effectively create the one-stop security solution, both the physical security and IT security elements must already be established with suitable objectives, key personnel roles, responsibilities and duties defined. Both areas share similar characteristics and vulnerabilities, however technical skill sets of personnel vary between them. Recent trends suggest that both the core elements of IT security and physical security are converging,



but still have a way to travel before key personnel have the individual capacity to cover the knowledge required for both areas. How much physical, IT and risk management experience are needed in the mix has not yet been defined, but as broad a skill set as possible is desirable.

Security is about educating the business leaders of the threats the organisation faces, the likely negative consequences and costs of those threats, and the necessary control measures that need to be implemented as effective safeguards.

To raise the security culture of the organisation it is important to develop an omnipresent security program that promotes effective security as an essential business reality, which avoids a weaker security stance based on the dangerously outdated notion that it "won't happen to us", improves lines of communication directly through to executive level, and in turn coordinates an approach to integrate physical security, information protection, and risk management.

a rational business oriented decision. To take a proactive stance, or outline the process of a reactive stance — or combination of both — to control, mitigate or even accept the risk. Effective business solutions can then be based on sound principals of cost benefit analysis, allowing for and considering the real "cost" of the human factor alongside the purely empirical aspects of the organisation.

Ultimately, examination of company antecedents for the current security profile may reveal areas of security that need reinforcement and assistance in development of the determined counter assurances, and to allow effectual change of the security culture across the organisation's business functions.

The vulnerability assessment is perhaps the most important step in the security planning process. In the current context of mitigating against terrorist attacks, care must be taken to ensure that the assessment is correctly focused on identifying how a potential attacker could take advantage of any given opportunity. The subsequent security planning and its effective-


Provisional Irish Republican Army (PIRA) in Northern Ireland, reveal a process whereby the PIRA attempted to gain control by increasing the size and capacity of their arsenal.

Early in their campaign small hand-delivered bombs, small arms and other small hand-held type devices were the order of the day. These were followed by small car bombs (typically 150kg). These resulted in structural damage and casualties that in turn led to the introduction of wire mesh fences and stand-off barriers to keep vehicles at a distance.

To overcome these barriers, terrorists moved to stand-off attacks using rifles, grenades and RPG7 rockets. This in turn forced security planners to introduce bullet resistant glazing and wall hardening to protect personnel. Sangars (bulwarks) to guard the perimeter were added and walls made high to reduce the size of explosive devices that could be thrown over. Vehicular access was withdrawn from affected facilities, but this led to booby traps on cars being parked in adjacent offset car parks. Bombs became larger and blast walls were constructed and larger stand-offs provided.

The PIRA responded with the Mark 10 Improvised mortars in 1981. Weighing 60kg, they contained 20kg of homemade explosives (HME) and were capable of demolishing a large building. Proxy bomb attacks were used in delivery vans. Next came spigot bombs, which were made from an oil drum filled with 300kg of HME. The Mk15 Mortars appeared in 1992. They weighed 118kg and contained 80kg of HME.

Improvised terrorist weapons are difficult to mathematically model and thus make designing protective measures that much more difficult. This can be said for both the physical and information security arenas. As in Northern Ireland where they applied a systematic approach, using a vulnerability analysis as the first step, they were able to eventually harden facilities to such an extent that no further loss of life has occurred in a hardened building since their introduction.

Good security planning based on a systematic risk analysis, rigorously practised, regularly reviewed and audited, can provide the solution to security vulnerabilities — even as serious as those faced by the security industry in Northern Ireland. 

*Allen Fleckner is director of security and risk, Emergency Management Experts, Melbourne.*

## **With increasing private sector ownership and management of utilities and essential services, governments are developing a coordinated approach to the protection of critical infrastructure**

With these elements in place, the real work can then begin. Both the physical and IT security aspects of the business must converge, recognise each other and put aside territorial issues for the greater good of the organisation. Each must be aware of the other's threats and vulnerabilities and their interdependencies.

The first stage in the process is to utilise a sound risk analysis process as a tool, tempered by the parameters set by the scope of task to form the foundation of a systems security program. The first blocks are laid by identifying the assets to be protected, the real threats to those assets, probability of those threats eventuating, and understanding the subsequent impact or consequences to the business.

A structured approach through threat identification and determination of the likelihood of occurrence help determine the true "expected cost" from any given occurrence. This in turn allows management to arrive at

ness for providing a protective solution are directly related to how effectively the vulnerability assessment was performed in the first instance. The first analysis is often the most costly in dollar terms, due to a lack of ground-work or security presence in the company, but subsequent assessments can be based on the knowledge gained of the business environment and processes that have been recorded in this first instance. Then, in order to remain truly effective, the analysis must be a recurring process that keeps abreast of new threats and risks — and methodologies to combat them — as they arrive. The need to provide for the changing risk environment is probably best illustrated by the process of terrorists deploying improved weapons and methodology to attack assets, and security planners upgrading the protective measures to resist those weapons, not in dissimilar fashion to a conventional arms race. Previous terrorist campaigns, such as that waged by the



# Local telco billing solution slashes costs



**A unique Australian technology is radically cutting ownership costs for telecommunications companies connecting to their partners, and the managing of these “interconnect” call revenues**

**AS PUBLIC COMMUNICATIONS** expand in size and type, divvying up the swelling flow of call charges is becoming increasingly complex, but canny international telcos using Australian interconnect billing technology are able to fossick for a rich lode among previously ignored call records.

Sydney-based Integration Management's (IM) in>Bill system has been adding to the revenues of customers in nine countries for the last five years, and is about to make its 17 telco clients even better off with a new data management architecture which cuts interconnect billing system cost of ownership (TCO) to a third.

Call data records (CDRs) are telcos' unit of currency, and every call generates a number of CDRs depending on its type, duration, distance, the various carriers involved and a host of other factors.

As these permutations to billing resolutions increase, so does the propensity for squabbling over who owes whom what among “partner” providers and carriers — let alone disgruntled subscribers disputing their apparently bloated account.

Accurate record keeping and management is crucial, with large telcos having to wade through data in tens of terabytes.

Essentially, interconnect billing software takes raw CDRs from the telco's switches, analyses them by the type of call which created them (mobile interconnect, local land-line, VoIP, international satellite, and the carriers involved etc) and sends the teased out data to a secondary CPU which ascribes them a value and stores them.

It is this information which is consolidated and so creates a disbursement report so all the players in the call chain get their share of the proceeds — interconnect settlement

Typically all this runs on a large proprietary server containing enough CPU grunt to process 100 million or more CDRs daily.

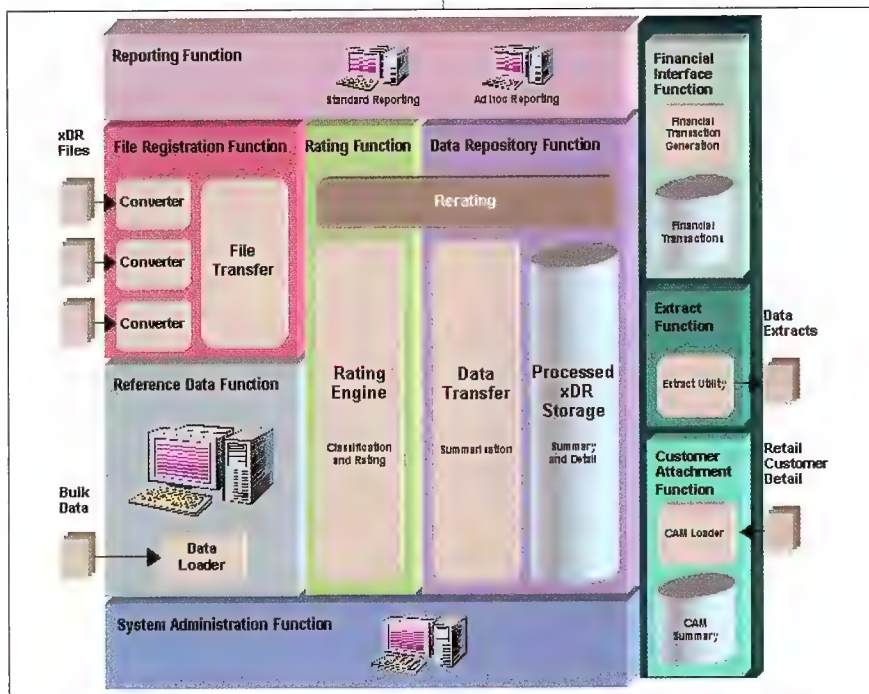
It is in this area that IM has created a new architecture paradigm to radically reduce TCO.

Its in>Bill HERE (Horizontally Extended Rating Engine) system, to be launched this month, takes the rating CPUs out of the server to run externally on a LAN.

in>Bill's primary software still runs on its Oracle 9 (or later) Unix or Linux platform on the server's central processor, but is now agnostic to the secondary rating engine processors which can run in any configuration driven by any vendor's chipsets whether Intel- or RISC-based.

Traditionally, cranking rating power to cope with increased data meant adding extra CPUs compatible with the server manufacturer's architecture, which for a Tier 2 telco





dealing with 200 million CDRs in a 20-hour day, could cost \$900,000 or more.

Worse, fluctuations in data levels, particularly as international telco markets are deregulated and new technologies emerge, could leave processing power lying idle as flows ebb, or forcing expensive proprietary upgrades to cope with projected increases which may not eventuate.

in>Bill HERE has been re-engineered to recognise any currently available off-the-shelf processor, bringing rating engine TCO nearer to \$200,000.

"Users now have total flexibility in adding CPU capacity in whatever increments, from any vendor, running at any speed," says Integration Management CEO Gray Goodwin. "And the hardware you'll buy tomorrow will be cheaper and faster than anything available today."

"We've broken the shackles on proprietary processing power for any telco dealing with say 20 million or more CDRs in a day and added automatic load balancing across a totally homogenous rating engine.

Intel worked closely with IM's development engineers to develop the open rating engine.

### Export market a priority

Founded in 1992, IM started exporting in 1994 and has added local and foreign VC funding since 2001.

"The decision to seek markets offshore

was a difficult one. We had two or three customers and in some ways so few is worse than none. But we persevered and when the Asian economic market collapsed in 1997 we had 40 people working in Indonesia."

An early version of the technology, called GIRS, was developed in 1996 to run on Digital's VMS, but with its demise, the first Unix version was launched in 1997 with Satelindo, AAPT and VoiceStream among its first users.

IM now lists AAPT, Telecom New Zealand and one of Malaysia's biggest wireless operators (8 million subscribers) among its 17 customers in nine countries including Indonesia, Malaysia, the Philippines, Taiwan, the USA and Nepal.

"I'm the only CEO you're likely to meet with a legitimate reason to visit Kathmandu once a year," Goodwin quips.)

Customers can access the system through a Web interface with hyperlinks allowing drill-down to reports on verification, usage analysis, summaries, overall system, errors and invoice records

in>Bill has found success through its ability to process interconnect, CABS (The American version of interconnect settlement, prescribed in detail for USA operators) and content settlements without external mediation devices and other than being Unix or Linux-based is hardware and operating system independent.

Mediation devices, usually proprietary boxes from vendors like CSG, Openet, Ericsson and Alcatel, act as electronic drafting pens, categorising CDRs between switches and the billing system.

Because in>Bill has these capabilities built in, it can take 100 per cent of the CDRs available from switches whereas competitive interconnect billing systems typically filter out transactions to process only about half available CDRs.

### Cracking fraud, tracking traffic

It is in the processing of the CDRs that other systems discard that in>Bill has been able to achieve uniquely high levels of revenue assurance by assaying data for any billable or value elements.

One Asian in>Bill user was able to crack a \$US10m racket in which fraudsters used poor logistics management of the GSM SIMs to make illegal calls which would have gone unnoticed without total CDR analysis, while a US customer was able to isolate revenue traffic from transit traffic it did not know was on its network.


"Because we can handle any sort of network, whether VPN, GPRS/WAP, 3G, Internet, broadband, mobile, number portability complexities and so on, and connect easily with legacy mediation or switch technology, our opportunities are global," Goodwin says.

"We're set for that with offices in the US and reps in China, India, Hong Kong, Thailand and elsewhere, and we have fluency in 18 languages among our staff so we can deliver local-language systems.

"In Australia, Telstra and Optus are not immediately available prospects so we must cast our net wider at least in the short term.

"There are smaller local operators who can get by with Microsoft Access or the like in the meantime, but new players are coming in and as their call volumes grow, particularly as fixed telephony is supplanted by mobile and other technologies, they can quickly reach the ROI threshold (about 250,000 CDRs a day) for a comprehensive system like ours.

"Their need to maximise revenues by controlling margins and reducing leakage is crucial".

Further information at [www.integration-man.com](http://www.integration-man.com) 



# Our IT people stand out from the rest.



Which people are first in line for the best jobs? More and more, Australian Computer Society members are the most sought after in the IT industry.

Why? Because ACS membership is a sure sign you've already put in the hardyards. It recognises your knowledge and experience. It lets people know that

you're an IT professional committed to everything the Society stands for. It means you've embraced the highest ethical standards and developed the highest levels of skill in applying the science of IT disciplines.

Indeed, having your level of expertise recognised by the Australian Computer

Society is a feather in your cap.

The bottom line: to stand out in a crowded IT market, you should apply for ACS membership now. Call 1800 626 029, or go to [www.acs.org.au](http://www.acs.org.au)

If you have specific enquiries, email [membersupport@acs.org.au](mailto:membersupport@acs.org.au)

For more information,

**Call 1800 626 029**

or visit [www.acs.org.au](http://www.acs.org.au)



**AUSTRALIAN  
COMPUTER  
SOCIETY**

*ICT Professionals Shaping Our Future*





By Bill French

# The Transformation of Search, Pt 1

I LOVE GOOGLE, but search (as we know it) is changing. Robin Good suggests (quite accurately) that Internet 3.0 is beginning to take shape. Assuming the Web as we know it, comprised mostly of HTML pages, is considered "2.0", the emerging phase is "3.0" and is all about applications and semantic interchange of information. Internet 3.0 is also a phase where machines interact with each other more, and where humans begin to take a passive role in surfing, and search.

The Web we all know well is designed for human interaction; proactively engaging in surfing and the quest for information, products, business and social connections, and services. But the future Web is so large and possesses so many opportunities to improve our lives that we will require machines to help us deal with the tsunami of messages and content important to us.

More than three years ago (May 2001) Bear Sterns Equity Research (Chris Kwak & Robert Fagin) published a lengthy report that introduced "Internet 3.0". There wasn't a mention in that report about the emergence of Weblogs or the growing demand for content syndication services and technologies. However, they did forecast the likely outcome of an information tsunami when decentralised and peer-to-peer publishing capabilities emerged.

"The Edge becomes the Internet and devices do more with what have to date been dormant native resources. PCs become dominant, and all clients are thick. The domain name system is no longer the only addressing

system utilised by networks. The browser is no longer the gateway to the Internet." — Bear Sterns Equity Research

Hmmm — the browser is no longer the gateway to the Internet. They probably weren't thinking of RSS newsreaders, but they were right anyway. Lately I find myself using my newsreader and Microsoft Office to find stuff. I'm biased [of course] because I helped build the first (and only) RSS-to-Office search integration available — MyST SmartSpace. The emergence of lots of wire-

base grows, exponentially adding to the pile. Now we're faced with finding a needle in an ever growing pile of needles. Try to find a blog or an RSS feed about a specific topic; it's almost impossible. Something is bound to change and it's likely that it will involve smaller (not larger) search indexes.

RSS feeds, specifically collections of them in a particular domain of expertise, serve as highly effective pools of knowledge that are easily searched. In Google, I find myself continually chasing my tail as I try to research

**With each new day the information base grows, exponentially adding to the pile**

less devices, plenty of hot-spots, and the use of loosely-coupled Web services to build smarter Internet applications represent the future gateway(s) to the Internet. These are great concepts and will yield all sorts of fantastic improvements in information services. However, there remain a fair number of perplexing problems, like finding stuff.

The many difficulties with finding relevant information will likely grow before we learn how to chip away at the issues because we seem to be able to create many new ways to capture information, but we have fewer ideas about organising or making better sense of information. Google now has more than four billion pages. As each day passes it adds [perhaps] millions more. With each new day the information

topics. With Microsoft Office Research Services, (based on tightly related sets of RSS information flows) I'm able to hunt for a red needle in a very small bag of multi-coloured needles; much better odds. Office Research Services that are targeted and focused on specific knowledge sources seem to make sense and the support for this approach is reflected in companies like Amazon, IBM, Lexis-Nexis, and Thomson Media. Office Research Services are available in a number of subjects and growing every day.

These types of information repositories are now affecting our search behaviours because we have new [narrower] resources to search that are both more timely and more focused on specific domains of expertise and




interest. The notion of search is transforming to take advantage of discrete addressability of domain-specific content that (in the past) was typically persisted in large blobs of stuff that requires more human-energy to harvest value. Weblogs and RSS feeds have opened the door to the atomisation of content; the increasing tendency to shrink information objects. The smaller information objects become, the more discrete (or unique) they tend to be. In turn, the objects become easier to find because they are so unique and therefore, more easily differentiated. XML standards and aggregation tools have made it possible to reassemble the atoms in ways that are more meaningful, thus fundamentally changing search requirements and possibilities. We've now begun to take seriously, the semantic Web.

There are other trends emerging as well. A9 (<http://a9.com>) is a good example of a "search application". It is fundamentally

based on Google, but it has some interesting ideas. Imagine search results that remember what you've looked at, and specifically call out items that are new. This is a slight take-away from RSS newsreader which do similar things. But A9 tiptoes into marrying the concept of looking for information with the process of using what you've found; more of a business process approach to search. At MyST we've looked at search, discovery, and utilisation in similar light. Our competitive intelligence tools provide exactly this capability making it possible for users to create observations (some would call these secure enterprise blog posts) about their discoveries. A9 provides a similar concept called the diary. There are a number of useful features in A9, but the most important aspect is the trend – search is becoming more of an application that intersects with how people work. Search is getting smarter about how you

work, what you look for, and ways that you might act on your discoveries.

My business partner and I have long believed that the ultimate search technology is one you don't explicitly use. Imagine turning the search paradigm on its head – instead of us finding stuff, why not stuff finding us? Pushing this idea to the extreme, our applications would understand what we are working on and automatically provide us with exactly the information that we need in every specific context. In that scenario, we would never need to search for stuff because the right stuff would find us.

In The Transformation of Search: Part Two (December issue of Information Age) we'll cover Microsoft Office documents that are smart enough to attract relevant information, search clustering from ThinkTank23 (the underlying technology at Vivisimo), and new search application ideas. 

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# The ECM Revolution

By Graeme Philipson

**THE HOTTEST PART** of the software industry today is ECM (Enterprise Content Management). In the early 90s it was ERP (Enterprise Resource Planning), and in the late 90s CRM (Customer Relationship Management).

The term "ERP" is no longer fashionable. None of the vendors use it any more — it seems so 20th century. But the product never went away, and most organisations now use some sort of integrated enterprise-wide applications software.

The term "CRM" has also gone out of fashion, but for a different reason. It didn't work. At least, it was very difficult to make it work, and stories of failed implementa-

and content management companies, like Interwoven and Vignette, and portal vendors like Hummingbird and Plumtree.

Established ERP vendors like SAP and Oracle are moving into the space. So are the business intelligence (BI) vendors, like Business Objects, Cognos and SAS. IBM, too, made its intentions clear with its acquisition last month of a small ECM company called Venetica. ECM is hot.

But what is it? It is software designed to gather, store, manage and present all of an organisation's digital content. That includes structured content, typically transactional data held in relational databases, but also unstructured content such as that found in e-mails, word processing documents, image libraries, Web pages and the like.

Estimates vary, but there is a rough consensus that structured data comprises

and 90s banks, governments and insurance companies digitised their paper documents.

Then the Internet hit, and organisations large and small built Web sites for promotional and other purposes. The word "content" came to be used for the great mass of information that found its way onto the Web.

Now the separate disciplines of storage data management, data management and content management are coalescing into ECM. A good indication of the trend is leading storage company EMC (with a confusingly similar abbreviation), which acquired document management company Documentum last year.

EMC is now promoting the concept of ILM (Integrated Lifecycle Management), a system where different types of data (or information — the terms are often used



**It is software designed to gather, store, manage and present all of an organisation's digital content**

tions abound. When last heard of, CRM was becoming a subset of ERP and both the user and vendor community were trying to work out what went wrong.

Now it's ECM's turn in the spotlight. ECM vendors have evolved from a number of different areas, which are now converging. They include the old document management and imaging players, like FileNet and Documentum. They include Web development

less than a quarter of all the information an organisation possesses. Over the 50-year history of the commercial computer we have become very good at storing and managing structured data. After Ted Codd's 1969 invention of the relational DBMS it became much easier to store transactional data, and the ERP revolution of the 90s cemented structured data at the core of most organisations' information systems.

But while all this was happening great masses of unstructured data were also being digitised and stored on PC hard disks and departmental servers. Word processor, spreadsheet and e-mail documents have proliferated at a massive rate. In the 80s

interchangeably) is parked in different types of storage, depending on its currency and its value. Archival data or backups are stored on tape — though increasingly disks are getting so cheap that is not necessary, transactional data on "off-line" disk, current data on "near-line" disk, and active data in memory.

EMC, and most other storage vendors, have increasingly become software companies in recent years. The disk drives themselves are now commodity items, incredibly cheap and reliable, and the real trick to their efficient use is in the storage management software that controls them. EMC's purchase of Documentum, and of a slew of other companies such as Legato and even Data General



a few years ago, indicates where that vendor believes the storage industry is headed.

The ECM vendors have a range of interesting techniques and technologies for handling unstructured data, and for integrating it with structured data. Analyst company Butler Group has coined the term "Content-Aware Applications" to describe the tendency towards such integration. New standards such as Web Services and XML and its many extensions are emerging to handle this integration.

Last month W3C (the World Wide Web Consortium), headed by Web pioneer Sir Timothy Berners-Lee, announced SSML (Speech Synthesis Markup Language), an extension of XML that will bring high-quality synthesised speech to Web applications. SSML will enable the Web to understand and propagate voice-based content, just as it can at the moment with text. It is an aspect of the emerging "Semantic Web", proposed


by Sir Timothy in his seminal 1999 book, *Weaving the Web*. The Semantic Web will enable data contained in Web pages to be coded with an extra dimension of information that will enable computers to make sense of it.

We are part of the way there, with XML and emerging Web services protocols, but the Semantic Web will contain much more meaning. It will enable intelligent software agents to perform many of the searches and conduct many of the transactions that can currently only be undertaken by humans. Extend that capability to voice, and the possibilities are endless.

Consider also that voice traffic over the telephone is now largely digital, and therefore capable of being stored on disk. Most voice traffic now is lost in the ether once the words are uttered, but there are increasing demands that it be stored, for both security

and commercial purposes. Storage is now so cheap that we have the technology, and the affordability, to do this.

Already clever technologies exist to mine unstructured voice data, just as we currently mine structured transactional data for patterns of interest to marketers or governments. This stuff is still in its infancy, but it will be big business in the years to come.

We are at an interesting inflection point in IT. Up until now, we have focused on the "T" — the technology. The real battle in this millennium will be over how we use the "I" — the information. The future belongs to unstructured data. ECM is just the first step. 

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# The LONG VIEW on LONG

**IN ITS FIRST PREVIEW** at the Microsoft Professional Developers' Conference, Windows XP successor Longhorn was shown running a 20-year-old copy of Visicalc. Ancient DOS software won't be the lone occupant of the Longhorn compatibility box. Win32, the Web, and even WinForms — the .Net era's first GUI framework — are all legacy APIs from Longhorn's perspective. Their replacements, Microsoft says, will jointly deliver "the best of Windows and the best of the Web".

The proof is still years away. But given the ambitious scope of the project, it's not too soon to consider how Longhorn will affect the vast majority of enterprises deeply invested in both Windows and the Web. How will the transition to Longhorn affect these twin legacies? Which aspects of the new system will embrace open standards, and which will entail lock-in? Will the benefits of the proprietary features outweigh cost? The answers differ for Longhorn's several subsystems; we'll consider each in turn.

One thing that's not in question, however, is Longhorn's deep commitment to .Net. The last time Microsoft said it was betting the company on managed code, the claim was heavy on marketing and short on substance.

This time there's no wiggle room. Longhorn is deeply tied to the .Net Framework. Although its three "pillars" — Avalon for presentation, WinFS (Windows File System)

for storage, and Indigo for communication — will rely on a mix of managed and unmanaged services, those pillars will export only managed APIs for use by Longhorn applications. That's great news for the long-term health of Windows, the productivity of its developers, and the security of its users.

To deliver these benefits, Microsoft is aiming a few years ahead of the hardware curve. Few of today's PCs and none of today's handhelds are likely targets for Longhorn.

Although the project may someday unify Windows, in the near term it will surely compound the already problematic fragmentation of the platform. As if that weren't headache enough, Microsoft's vote of no confidence in the future of many basic Web standards puts the company on a collision course with competitors who continue to invest in those standards — and with customers who would like to see Web standards supported and advanced.

It's an aggressive and risky strategy. To appreciate the payoff, you can't just consider Longhorn's features individually, Microsoft says. The value of the system as a whole, the company insists, will exceed the value of the sum of its parts. Concept videos paint the big picture. In one of them, a real-estate broker uses Avalon's 2-D and 3-D graphics to visualize map data, WinFS metadata and contacts to assemble and share a package of information, and Indigo's XML messaging to tap into Web services and to collaborate peer-to-peer with investors and lenders.

In the Longhorn-only world of the demos, rich-client applications flow to PCs on demand using the ClickOnce feature that will debut in the forthcoming .Net Framework 2.0, aka Whidbey.

The real world, of course, will never be Longhorn-only. By the end of the decade, Longhorn will be one of several viable Windows and non-Windows options. No matter which desktop OS predominates, there will likely be diversity within your enterprise and certainly among your business partners and customers. And the desktop is just part of an increasingly diverse IT landscape. In some ways Longhorn embraces that diversity, in other ways decidedly not. Although its pillars are complementary, each bears its own



# HORN

Although years away, the successor to Windows XP is setting off alarms in the enterprise

By Jon Udell

unique relationship to current technologies and standards. By teasing out those relationships, we can see where the proprietary lines are being drawn and can begin to assess the kinds of trade-offs Longhorn will entail.

## The Indigo wire

If you believe that Web services will be the lingua franca of network communications in the coming decades — as TCP/IP was in past decades — then you will regard Indigo as the least controversial of Longhorn's pillars. It is both solidly standards-based and aggressively innovative. Not all the standards that Indigo embraces are fully baked: security, identity federation, reliable messaging, and transactions are among those still evolving. Even the SOAP transport at Indigo's core has yet to achieve ubiquity, and some wonder if it ever will. From a 50,000-foot view, however, there's broad consensus that some flavour of XML messaging will be the glue that connects services, applications, people, and devices.

Extending a tradition that dates back to Microsoft's earliest COM-based middleware, Indigo will offer developers hands-off control of the messaging system, enabling them to invoke asynchrony, transactions, or encryption using terse metadata annotations

rather than many lines of code. The tools and frameworks that support this declarative style will be proprietary and, Microsoft hopes, compelling. But Indigo's charter is to ensure that the resulting applications and services can interoperate cleanly with any standards-based services fabric.

Two additional factors make Indigo especially noteworthy. First, it's the only Longhorn pillar that will ship for down-level clients, maybe even ahead of the Longhorn OS itself. Second, Indigo repurposes the networking substrate to make XML messaging efficient for local or peer-to-peer use. So, in theory, developers will be able to apply a single set of skills to Longhorn-only, Windows-only, and open environments. The devil is always in the details, but Indigo appears to offer maximal leverage with minimal lock-in.

## WinFS storage

Longhorn's storage system, WinFS, will attempt a feat never successfully performed on the mainstream desktop. It will interpose a relational database between NTFS and clients, as in both users and applications. And it will use that database not only to optimise searching but also to enable more flexible ways of organising information. From a

user's perspective, the distinction between search and navigation will blur. Conventional queries based on well-known properties — document name, author, date — will be accelerated. New kinds of queries will be enabled by relationships among properties. Because properties are owned by the system, applications will pool their use of them. And because WinFS does not model a tree but rather a directed acyclic graph, two or more folders will be able to hold the same instance of an item.

Working in concert, these capabilities mean that if appropriate metadata exists — a huge "if", of course — you'll be able to make requests such as: "Show me recent messages and documents related to project X." You'll be able to save that query as a self-updating folder. And you'll be able to take an item from that folder — not a shortcut or symbolic link but the item itself, as represented by its WinFS ID — and put it onto your to-do list without removing it from other places.

If .Net's theme is managed code, the theme of WinFS is managed metadata. And indeed, the two are joined at the hip. WinFS items are instances of .Net Framework classes. Applications declare them using a proprietary schema language and search



# Update: Microsoft scales back plans for Longhorn

By John Fontana  
Network World Fusion

At the end of August, Microsoft made a dramatic retreat from its lofty goals for Longhorn, saying its highly touted storage subsystem would not ship with the client operating system.

Instead, Microsoft said WinFS storage and search technology would be in beta when the Longhorn client operating system ships in 2006. This is the first time Microsoft has confirmed a ship date for the client operating system. The server version remains slated for 2007.

In addition, Microsoft said WinFX would be back-ported to Windows XP and Windows Server 2003 and made available when Longhorn ships. WinFX replaces the Win32 programming model and includes two foundation technologies slated for Longhorn — a presentation subsystem called Avalon and Web-service middleware called Indigo. In essence, this announcement dilutes the importance of those two technologies to the Longhorn platform.

"I question what is left of Longhorn. I just don't know until we have more details," said Peter Pawlak, an analyst with Directions on Microsoft, an independent research firm. "What will be the difference (in Longhorn) from a Windows XP box with WinFX?" says Pawlak.

The move to expand the platforms that support Avalon and Indigo means developers will have a lot of the newfangled Longhorn infrastructure to write applications against without having to worry about users adopting Longhorn to take advantage of the applications.

The changes make Longhorn more of an evolution from Windows XP rather than the revolution in desktop computing that Microsoft has been touting, Microsoft officials admitted.

"The path to get to our very ambitious vision for Windows is different and is more evolutionary in appearance rather than one big leap as we have described in the past (with Longhorn)," says Greg Sullivan, lead product manager for the Windows client group at Microsoft.

But Sullivan did say Longhorn would be distinct from Windows XP and Windows Server 2003. "There will be differentiation features available in Longhorn, from the fundamentals of the core OS kernel, to performance, reliability and security and a host of management tools and an error-reporting infrastructure — all the things that IT is interested in." He said Longhorn would

ship in the second half of 2006 and would be "broadly available" by the end of that year.

He added that "Longhorn will bring tremendous strides to achieving the Windows platform vision, and subsequent to that we will get out WinFS and we will get to the vision that we outlined at the PDC."

At its Professional Developers Conference in November, where Microsoft distributed a pre-alpha version of Longhorn, Microsoft's chief software architect Bill Gates said Longhorn would provide opportunities for developers that would be stronger over the next decade than at any time in history.

Now that seems only like tough talk as Longhorn's key constructs will clearly develop on a more gradual schedule.

That makes sense, according to some experts. Microsoft has always relied on its development community to generate excitement around a new technology, which is how it began to roll out .Net.

"If they tie (Avalon and Indigo) to Longhorn it would take years for them to get developers on it," says Pawlak of Directions of Microsoft. "By expanding WinFX, they get the same thing they've had with .Net — they kick-start development. That's pretty interesting. I never got WinFX in isolation (on the Longhorn platform)."

Microsoft's Sullivan admitted that developers had hounded Microsoft to make Avalon and Indigo available to more platforms, something that will not happen with WinFS.

"We do not plan to make WinFS available on down-level platforms," he confirmed.

The delay of WinFS is what really takes the shine off Longhorn. Gates said at the PDC in November that WinFS was the realization of a 10-year dream for him around search technology and termed it his "Holy Grail".

WinFS, the storage subsystem planned for Longhorn, is designed to break data away from individual applications and interfaces so it can be stored and shared universally at the platform level. It also would allow data searches that stretch across the desktop PC, the network and Web services.

Having WinFS in the Longhorn client really didn't make sense if there was no server-side support to back it up, experts said.

Microsoft's Sullivan said Longhorn would include local desktop searching as a hint of the power in the relational database capabilities of WinFS.

The first beta of Longhorn is expected to ship next year.

them using a proprietary query language. Could XML-oriented schema and query languages solve the same problems in a more open way, leveraging the trend — strongly evident in Microsoft's own Office products — toward open document formats? Quentin Clark, director of program management for WinFS at Microsoft, argues why not. The relational core of WinFS is an operational necessity, he says, but he points out

that WinFS and Yukon do share common SQL/XML code.

Here's the upshot. If you're investing today in XML document formats, you should expect WinFS to do a good job running XPath or XQuery searches over them. Of course you'd also like the system to translate between XML data and WinFS metadata. That way, an XML document produced by a non-WinFS-aware — and perhaps

non-Windows — application could participate in WinFS relationships and behave nicely in the Longhorn shell. Clark says some translation will occur, but he does not yet know how automatic it will be.

## The Avalon view

Avalon reboots Windows graphics to unify three modes — documents, user interfaces, and media — within a single display stack.



# MS manager gets to heart of Longhorn pillar

By Jon Udell

Quentin Clark is director of program management for WinFS (Windows File System). We asked him to comment on a range of WinFS issues and especially on the relationship between WinFS and XML.

**IA:** WinFS has one notion of types and queries, and XML has another. How do we reconcile these worlds?

**QC:** Consider a Word document in WinFS. It has a WinFS type, Document, with properties like Author and Title. But that WinFS type will also include an XML data type.

**IA:** So I'll be able to use XPath or maybe XQuery to query that XML data type?

**QC:** Yes, we're leveraging Yukon's XPath/XQuery capability. That gives you a lot of power. You can walk up to WinFS and issue XPath queries into items that have XML data types, and then we can go and reason over those things. One thing we're struggling with now – it's an open design issue – is what our ability will be to give people the opportunity to do metadata handling on XML that's just sitting in a file stream.

**IA:** Is the relational engine the only way to maintain control over the managed metadata?

**QC:** It's just a fact that there are more things we can do with a normal scalar property – a thing that has a column of

its own inside the SQL engine – than we can with do some piece of XML deep inside a data type. Can I find things inside XML data types? You bet. Can I build rules around that? Yes. But if the user right-clicks in the shell because they want to add a column that displays the proposal ID, how easy will that be if the thing is buried inside an XML data type?

**IA:** Given an XML schema, it seems that automated mapping should be possible.

**QC:** My dream here is to allow developer tools to build extensions to WinFS types, point them at XSDs [XML Schema Descriptions] they've created in Office, and wire things up automatically. That's where I want to land. What we get done by Beta 1 or RTM [release to manufacturing] is open to debate. But the basic support for metadata handlers looking into file streams and putting things up into the query space – all that is very much baked and committed.

**IA:** What's the relationship between WinFS and Yukon?

**QC:** Nobody has built an XML store that has the level of scale, performance, or capabilities of today's relational stores. It's true, as you say, that database vendors are now supporting XML. A really good and deep integration of XML into a relational database gives you the best of both worlds. So the data engine at the heart of both Yukon and WinFS – the thing that's breaking apart queries, doing optimisations, storing B-trees – is common, though not the same version.

According to Darryn Dieken, group program manager of Avalon at Microsoft, the massive effort has already produced nearly 20,000 APIs. It's a top-to-bottom overhaul involving drivers, the services formerly provided by Win32's User and GDI (graphics device interface) modules and the XAML (Extensible Application Markup Language) programming toolkit. The goal, Dieken says, is to equip PCs in the coming decade for efficient, seamlessly integrated display of "presentation experiences" that combine video, animation, 2-D and 3-D graphics, rich document display and editing, and compelling software interfaces.

Along the way, quite a lot of baggage had to be jettisoned. Avalon will run only on high-end PCs. A stripped-down version might be capable of running Windows CE, Dieken says, but "the spirit around Avalon is to exploit the PC as much as possible".

Similarly, Avalon plays on the Web only in the sense that ClickOnce deployment can send partially trusted applications to clients running the full Avalon stack. It makes no use of Web standards such as XHTML, CSS, or SVG (Scalable Vector Graphics) and indeed invents its own counterparts to these. Some observers initially hoped that XAML would support an alternate

rendering for the Web. Clearly, enterprise developers seeking maximal reach for minimal effort would have loved that solution. According to Dieken, the Avalon team gave it a try, spending months working on an ASP.Net-like approach before concluding that no single model could adequately express both paradigms.

If you decide there's competitive advantage in giving rich Avalon experiences to your intranet or Internet users, Microsoft will dramatically simplify the task. But you'll have to do everything again – and very differently if you also want to reach the Web. Although ASP.Net 2.0 can surely help, Microsoft is

**If you decide there's competitive advantage in giving rich Avalon experiences to your intranet or Internet users, Microsoft will dramatically simplify the task**



# Longhorn through the open-source lens

By Jon Udell

**We asked two open source leaders — Brendan Eich, chief architect of Mozilla, and Miguel de Icaza, CTO of Novell's Ximian services business unit — for their perspectives on Longhorn's Avalon presentation subsystem.**

**IA: What's your take on Avalon?**

**BE:** Microsoft's doing things that are valid according to their business interests and also, in general engineering terms, with an eye toward the [professional developers]. They have to keep them happy, give them the tools they want, keep them hooked on the next version of the OS.

**IA: Of course, a lot of those folks tell us that the browser and the Web are their bread and butter.**

**BE:** That's my fond hope, too. I'm sure there will always be certified Windows developers. But I do wonder if they'll have trouble convincing people to migrate and pay large costs to reinvest in redoing things — especially if they're not supporting the Web well and if people find the Web to be lower cost yet still adequate for presentation.

**Mdi:** Avalon is a very extensive API, but while there is a lot of abstraction, there is not enough encapsulation. It's a high-level standard toolkit. The problem we have today with Unix toolkits, Mac OS toolkits, and Windows toolkits is that we are still using the same controls. Developers and designers are building applications in terms of the following items: scroll bars, enter lines, buttons, text entries, radio buttons, pop-up menus, combo boxes. Avalon is not presenting

us with new controls or innovative ways of dealing with large volumes of data. And yet this massive API says you have to be completely bound to a particular version of the .Net Framework. This is not the approach the Web has taken, which is that a table or button can be rendered in different ways appropriate to the platform.

**BE:** That's right. If you look at XAML's style language, they really muddle the presentation/structure separation.

**Mdi:** Avalon is the next ActiveX. One thing that is a problem when trying to do Linux desktop rollouts is that companies often have a few proprietary ActiveX components. Avalon will be a lot easier to write than the previous ActiveX; it's a lot prettier, so when organisations are using Longhorn-based machines, which I assume will be sold everywhere by 2008, it's going to be increasingly hard for the rest of us to get there unless we have an implementation of an equivalent technology. So, eventually somebody will implement that, whether as part of the Mono project or a separate project.

**IA: It's been argued that because there are 15 ways people have approached XUL [Extensible User Interface Language], Flex, XAML, whatever — and you can't reconcile them — maybe it's time for a de facto standard implementation.**

**BE:** XAML is not that thing, though, because, as Miguel says, they've bound it too tightly to their class structure. And that surprises me because they should have institutional memory of all the versions of OLE and all the hell they had to go through in terms of compatibility glue. Do they want to do that again?

like to use .Net, but they refrain because there is no end-user version of Windows that includes .Net as standard equipment. For enterprise developers, however, there's more to worry about than the centre of gravity of the Windows installed base. Microsoft is careful to point out that Avalon is not a reach technology. But enterprises need reach and can ill afford to invest in a rich-client technology that forecloses that option.


## The whole and the parts

Longhorn would make perfect sense in an alternate universe where the Web never happened, where phones stayed dumb, and where Windows applications owned the edge of the network. But in this universe nothing owns the edge. We have browsers, we have computerised phones, and we have a growing number of portable, rich-client technologies. Although Microsoft would like us to regard Longhorn as a unified whole that's greater than the sum of its parts, its pillars will intersect with enterprise IT in quite different ways.

Indigo, by virtue of its developer-friendly simplification of Web services protocols, could propel Microsoft into the forefront of enterprise middleware. Although Longhorn's use of Indigo will focus on networks of Windows peers, the technology isn't bound to Longhorn. Expect to see Indigo-powered "enterprise service bus" offerings from Microsoft and partners.

If WinFS succeeds in delivering improvements in users' ability to organise and manage local information, enterprises looking to drive productivity up — and support costs down — will want it. The wild card will be the level of support for legacy document formats and emerging XML formats. Benefits that accrue only to new WinFS-aware applications won't tip the scale.

Avalon's TV-like "presentation experiences" clearly favour the home entertainment centre over the business desktop. An accelerated convergence of voice, video, and data could alter that equation, and Avalon is designed to help drive that convergence. But enterprises concerned about reach and lock-in will need to carefully evaluate the trade-offs.

How will things play out? Check in five years and let us know if our crystal ball was cloudy or clear. 

doing nothing to improve Internet Explorer's support for DOM, CSS, SVG, or other standard ways to enrich the browser.

And despite the fact that open source critics assert that XAML need not have been bound inextricably to the proprietary Avalon stack, Microsoft sees no possibility of — and no real motivation for — a standard rich-client

technology. "You can make an argument that the customer will benefit from the competition," Dieken says, adding that "it will be hard for some developers who have to make a choice".

For developers of commercial Windows software, that choice boils down to timing. Today, for example, more developers would



# Guiding our **BIGGEST** e-government job

Australian Customs' massive re-engineering project calls for high-level business nous

**MURRAY HARRISON** is a professional public servant, a 30-year veteran of management roles in the Department of Veterans' Affairs (DVA) and the Department of Social Security (DSS), charged with developing and managing welfare programs.

Like others in government including DIMIA CIO Cheryl Hannah (last issue of *Information Age*), his appointment in 2002 to an ICT executive role as CIO of the Australian Customs Service is founded on successful management roles in the Senior Executive Service, rather than the traditional trek through information technology.

Joining DVA in 1971, he has climbed a management ladder built of successful projects in benefits, compensation and income support, moving into a CIO role in 1997 when the department moved to increase the business focus of its ICT operations.





## "It was a brave decision to change horses in midstream, and the project was restarted pretty well from scratch in late 2001 with little carried over from the EDS effort"

He describes it as "a time of quantum change in IT" and a fortuitous point of entry into taking on a CIO role to harness rapidly changing technological dynamics to meet DVA's business imperatives.

His move to Customs two years ago to take up the newly created CIO role included taking control of the technical components of the department's massive, but troubled, Cargo Management Re-engineering Program (CRM) which would test his management acumen.

The program began in 1996 with a review of Customs' IT infrastructure and its ability to handle expanding processing volumes, coincident with the appointment of outsourcer EDS to a wide-ranging contract to support the department's IT operations and systems.

Customs notionally estimated the cost of new software development and an overall architecture to streamline the management of imports, exports and revenue collection at about \$30m, with the project to be undertaken by EDS.

"This figure was just a line drawn in the sand against which Customs could benchmark outsourcing bids, not a hard figure as the project had not gone to spec stage, CCF was not included and the more complex import management component had not been studied to any great degree," Harrison says.

It became apparent to both organisations that bundling the task with day-to-day support services "was not the correct thing to do", and at the end of the 90s EDS relinquished the development task, particularly its software component, by mutual agreement and concentrated on its core responsibilities.

EDS' contract has recently been extended to 2007.

Customs went to tender for CMR in 2001, with a successful Computer Associates consortium of Kaz, IOCORE and others bidding \$29.7m for the core cargo reporting and management business.

An IBM-led group would develop Customs Connect Facility, a gateway for Web-enabled access to Customs' re-engineered IT infrastructure, and beyond into government agencies interested in who was sending what in and out of Australia: Australian Quarantine, Bureau of Statistics, Foreign Affairs and Trade — about a dozen in all.

"It was a brave decision to change horses in midstream, and the project was restarted pretty well from scratch in late 2001 with little carried over from the EDS effort."

After the decision was made, Harrison was appointed CIO of Customs in 2002 with its 4800 staff across Australia and in offshore posts — and to manage the development and implementation of CMR.

"For all intents and purposes, developing CMR effectively started two years ago, and while there have been some delays in the import end of the development, the project is on time and will start in October.

"There are commentators that insist that we started in 1997 and are fond of talking about a 'seven-year project' but that's simply not the case. This has been an extraordinarily intensive exercise to create a system which is unique in the world."

He also bristles on the question of costs: "We never said what the project would cost at the outset because we didn't know until it was fully defined and specified.

"When the CA group started into the project it rapidly became apparent that the job was about three times bigger than had previously been discussed in the 90s; the notional \$30m was meaningless and the

software development, when fully scoped, cost around \$50m.

"The CCF gateway infrastructure came in at \$50m and Customs' costs over five years to get the project fully embedded will be about \$100m — all inclusive of GST. So yes, it cost a significant amount, but no more than expected for a project of this size and complexity.


"And given that the system will collect about \$7.5 billion a year in Customs duties, it's not a bad investment

"Transition costs are significant, but then so is the job of dealing with the thousands of private sector stakeholders and organisations, and about 30 key agencies."

He also points out that efforts in the US to create a similar management system called Customs ACE has already gone through \$US1.2bn and is expected to go to \$2.2bn by the time it's finished.

"This is the most important government/industry project in Australia. What we are doing is providing a Web-based interchange between the government and industry for import and export of goods that will enable anyone to access our systems directly to meet their obligations to tell us about their cargo movements, via the Internet.

"If you want to export/import something now you have to go to broker who has a back-end system that does the Customs work and you pay for it. You can still do all that, but under the new system you can register with us, tell us what you have to, we'll give you access to our applications, you fill out the forms, and we'll tell you if you owe us any money.

"We have a sophisticated risk assessment function which will tell us whether we should look at the goods when they come in. It's a simple initial process, but there's an awful lot happening at the back end." 



# Customs' CMR: what it is and what it does

Australia's most ambitious e-government project sets world benchmark for cargo management

**AN EXAMINATION** of the Australian Customs Service (ACS) systems in 1996 has led to what its CIO, Murray Harrison, describes as the biggest e-government project in Australia.

Its Cargo Management Re-engineering Program (CMR) program, with its Integrated Cargo System (ICS) at its core, went live on October 6 after two years' intensive development.

It has been far from plain sailing for Customs with some radical changes of direction during the first years of its definition and planning, and some criticism from various industry and media commentators as timelines lengthened and arguments over its real costs drew the ire of politicians (see box).

Essentially, the re-engineering project was needed to create a secure Web-based "single face of government" for players in the import/export supply chain to cope with annual trade processing volumes of 3 million import entries, 1.2 million export clearances, 4 million container and 100,000 flight movements, and the collection of nearly \$7.5 billion in Customs duties.

It is a world first in this field; its nearest equivalent, the American ACE system is so far estimated to cost more than \$US2bn and is still far from complete.

Half a dozen ageing, partially integrated legacy systems reaching end of life would be replaced by a single, custom-built IT platform with ICS as its central access and processing hub to allow for the direct reporting and management of cargo movements with direct interface with 12 other government agencies like Quarantine and Statistics.

Legislation passed in 2001 created a legal framework for electronic cargo management secured by Public Key Infrastructure (PKI) using the GateKeeper accredited certification

authority to deliver registration or certification services to meet Commonwealth standards.

Sophisticated risk assessment procedures to protect Australia's borders got high priority in system design.

Individuals and businesses wanting to access the system need a digital certificate from a Customs-approved GateKeeper compliant certification authority, and must meet Customs requirements in their own systems to access the export side of ICS.

The more complex import side of ICS is scheduled to come on stream by the middle of next year.

Organisations wanting to access ICS using electronic data interchange (EDI) to batch communications can also do so. Its implementation under the new regime is detailed at customs.gov.au along with hundreds of pages of information on CMR's individual systems, customer registration, e-learning, external software development suppliers and rules, and general overviews.

A number of service providers were retained to develop and implement systems: Computer Associates' consortium with Kaz, IOCORE and NCR for applications, IBM for professional services (and some hardware and software under its arrangement with Customs outsource partner EDS), BeTrusted

(now Cybertrust) for PKI software and services for the Customs Connect Facility (CCF) "gateway", Novell for identity management and directory services software, and VeriSign for GateKeeper.

Long-established outsource partner EDS has recently had its contract for infrastructure support for mainframe, mid-range platforms and hosting applications, and for application production support and helpdesk services extended to June 30, 2007 bringing its total contract to \$542m.

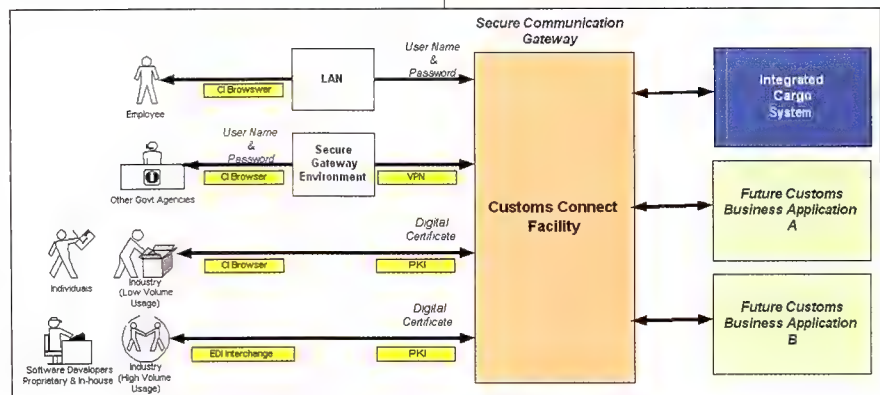
Once the import side of ICS is also in place, CMR will handle more than 30 million inbound messages annually and 93 million outbound.

## Integrated Cargo System (ICS)

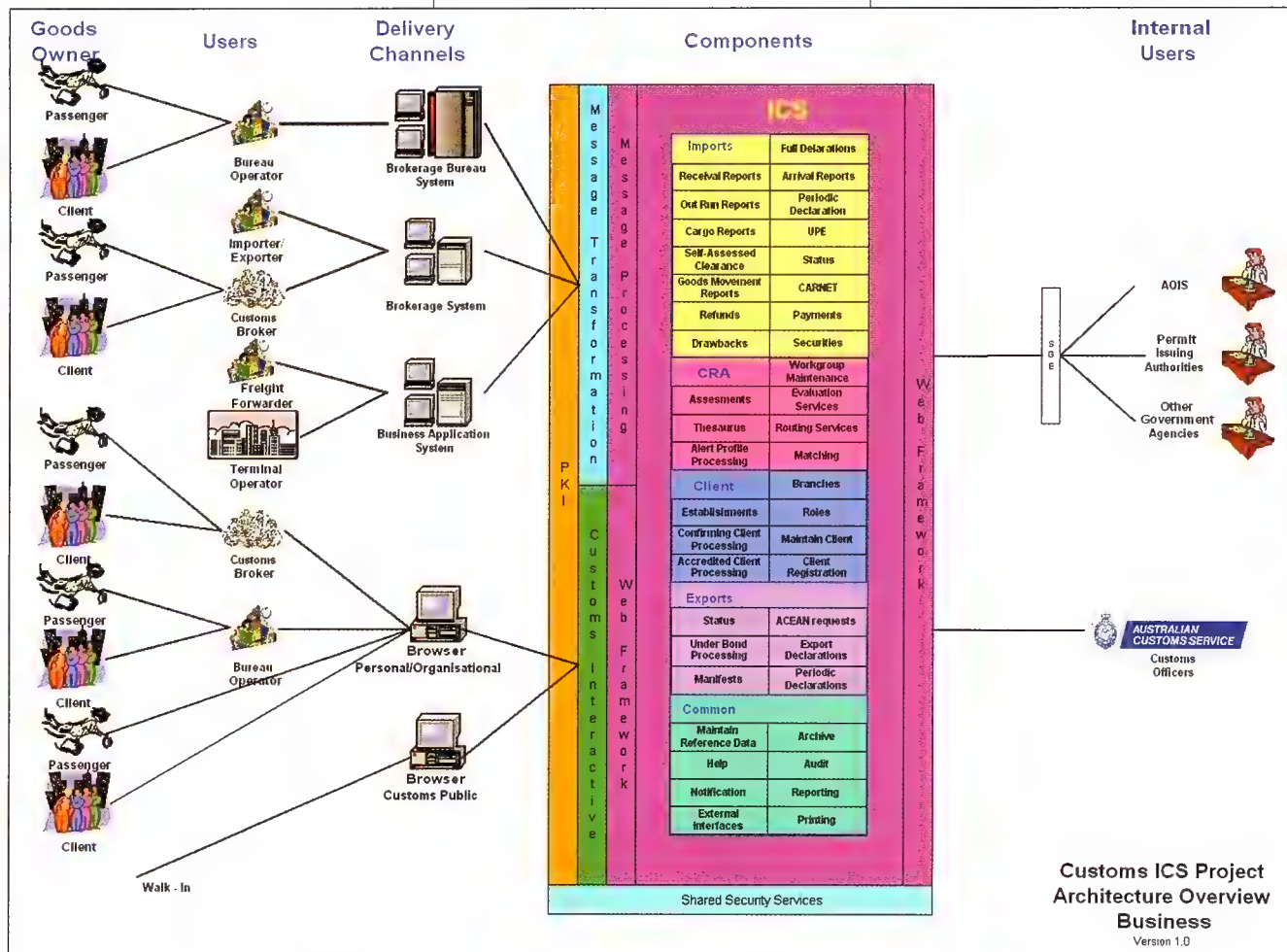
The cornerstone of CMR, ICS is an integrated system giving enhanced risk assessment at the border and allowing more efficient cargo tracking. Its software suite has 23,000 function points.

It operates on an IBM OS390 mainframe running ZOS with transactions in a CICS environment with DB2 database management. MQ-series provides the mainframe interfaces with the CCF gateway and other business applications.

Customs' Web-based user interface,







Customs Interactive (CI) has a WebSphere Java application server front end. CI system software is hosted on infrastructure managed as part of the CCF gateway.

Transaction application code to support the cargo management business rules for both EDI and CI channels was developed in the AdvantageGen/CoolGen environment.

ICS's transaction and event processing architectures create and manage events to prioritise and balance message loads across the system to maintain throughput, with automatic exception and recovery management.

Design detail in the 19,000 pages of analysis for ICS includes 800 screens, 16,000 business rules, 70 complex business messages, 850 database tables, 3700 executable load modules,

1800 CICS transaction types, 55 batch jobs, 90 reports and 35 system interfaces.

### Customs Connect Facility (CCF)

CCF is the gateway to Customs' business applications. Importers, exports and brokers can transact via an interactive mode (Customs Interactive) using industry standard Web services or with batch mode EDI.

A data transformation facility translates Customs and industry-agreed standards for data exchanges (eg UN/EDIFACT) to Customs' application requirements, significantly reducing customers' previous need to use a plethora of data formats.

It also allows Customs staff to track messages through the CCF.

Communication channel management and CI runs on Sun Solaris Unix platforms and Cisco routers, with validation and transformation processed on IBM P- and SP-series Unix platforms and Wintel servers running IBM AIX, Win2K, DB2, WebSphere, Tivoli WebSeal and Baltimore's FormSecure.

Overall, the CMR architecture was designed to be multi-tiered, highly available, scalable and to have shared security components with common code bases (for services such as authentication and authorisation).

The CCF solution has its origins in the IBM e-business infrastructure reference architecture with J2EE, WS-Security (SAML), XML, UN/EDIFACT D99B and LDAP.

**Sophisticated risk assessment procedures to protect Australia's borders got high priority in system design**



# A BUCK A WEEK TO KNOW IT

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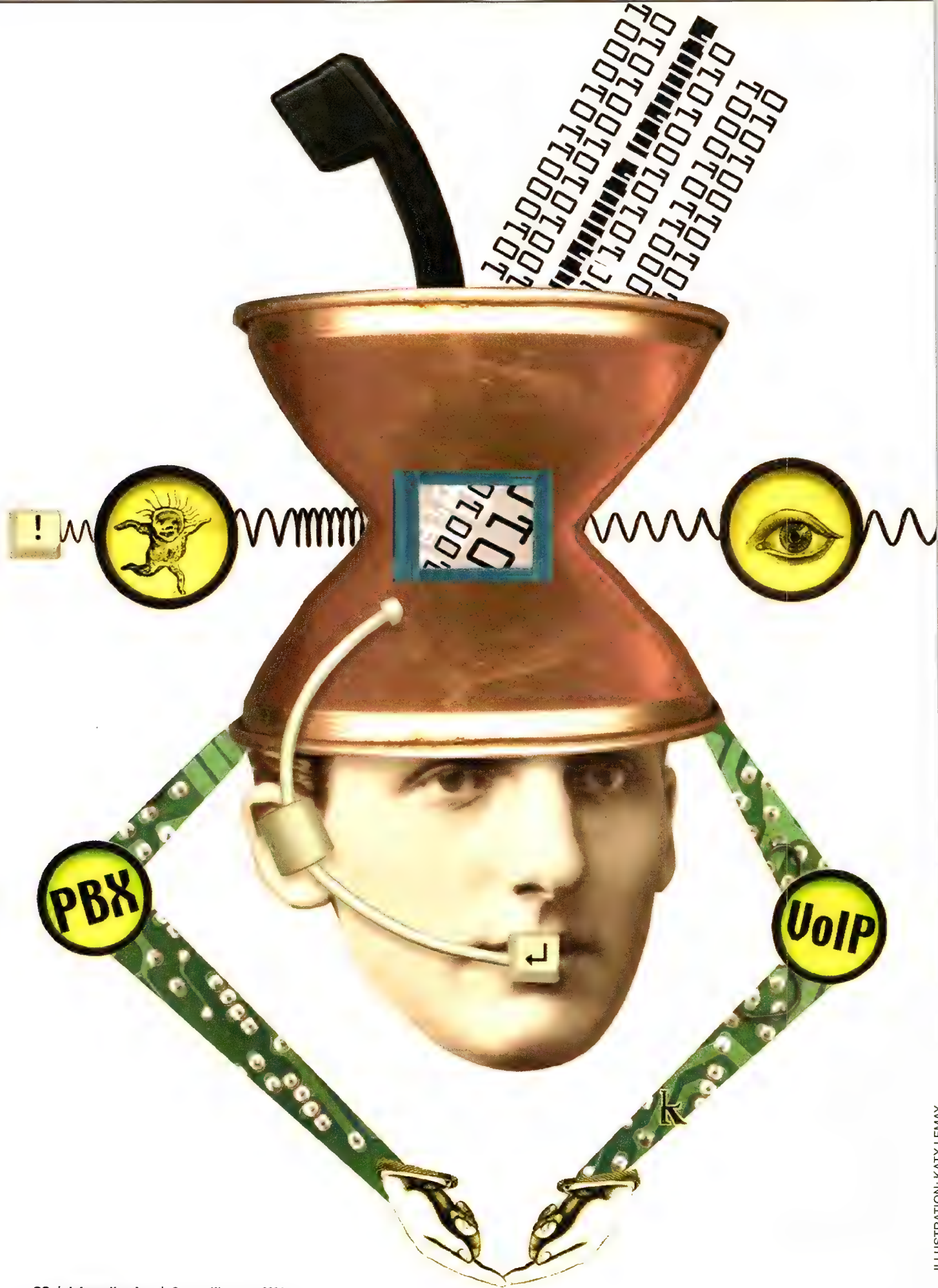
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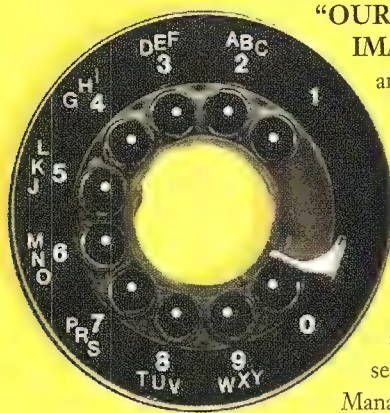






# VoIP: The promise and the pain

By Leon Erlanger



**"OUR BRANCHES HAD EVERY TYPE OF PHONE SYSTEM IMAGINABLE,"** says Stan Adams, SouthTrust's group vice president of voice and data. With 730 branches and 13,200 employees, SouthTrust, a regional US bank, had been growing through acquisitions since 2000.

"Dealing with all those maintenance programs was turning into a major management headache. We were about to upgrade all our branches to T1s and switched 100Mb anyway, so we decided to build a converged IP voice/data network that would let us manage all our voice and data services centrally from Birmingham."

Now all of SouthTrust's sites are populated with IP-based phone handsets connected over the data network to a few Cisco CallManager IP PBX server clusters in Birmingham, which are in turn backed up by another CallManager cluster in Atlanta. "The CallManager clusters manage call setup, voice mail, and long distance for all our sites," Adams says. "The savings we've seen from centralised management are incredible. And now we can take advantage of cheaper high-volume long-distance rates and bypass long distance tolls on the branch WAN connections."

SouthTrust's story is a great example of how far enterprise VoIP (voice over IP) has come in the past few years. The consensus is that VoIP, which describes many different scenarios for running call control and digitised voice traffic over enterprise IP data networks, works. "The early issues of voice quality, quality of service, scalability, migration, features, and functionality in enterprise IP phone systems have pretty much been solved," says Jorge Blanco, vice president of marketing at Avaya, a major player in both the legacy TDM (time-division multiplexing) and IP telephony market.

Steve Blood, research vice president at Gartner, agrees. "You can now choose from a host of VoIP integrators such as IBM and HP and service providers such as Verizon that have real expertise and track records deploying VoIP in the enterprise." Verizon typically acts as an integrator and then takes over management of customer-based VoIP equipment. Many carriers also offer an IP form of Centrex to small and some midsize businesses.

Perhaps even more exciting than cost savings is the promise VoIP holds for enabling true converged voice and data applications. Instead of being the separate silo that it has been up



# Making VoIP secure

A converged voice and data network may sound like a fabulous idea until you remember the last time a worm or denial of service attack brought your network to its knees. Do you really want the network and your phone system to go down together?

Now turn the paranoia up a notch and imagine hackers penetrating your IP PBX or gateway to make hundreds of long-distance calls, to check your CFO's voice mail, or to forward your CEO's calls to your competitors. Or think about savvy employees using a tcpdump and a readily available Unix tool called Voice Over Misconfigured Internet Telephones (also known as VOMIT) to snoop on calls. People have come to accept all the crazy things that can happen on a data network, but they are used to a much higher level of reliability and security from their phone system, especially when you consider that it may be needed to dial 000.

There are many things you can do to make the likelihood of an attack much lower than it would be on the data portion of your network. But first, you should know that legacy PBXes are not immune to attacks, either. Hackers often gain access by dialling into administrative ports or taking over extensions and voice mail for terminated employees whose accounts haven't been deactivated. There are lots of Web sites devoted to conventional phone hacking.

That said, an IP PBX is far more likely to be affected by events that occur on the data network. VoIP (voice over IP) vendors understand this and have risen to the occasion with a variety of security features. To start, many eschew Windows in favour of VxWorks, Linux, or other operating systems with less frightening records of virus and other attacks and less constant streams of patches. They typically harden the OS, using only the services that are essential for the applications, and their "servers" are actually appliances that come preconfigured. Cisco uses a hardened version of Windows NT in its CallManager sys-

tems, for example. Most vendors also offer voice and call-control encryption over the IP LAN or WAN. Cisco even provides built-in intrusion-detection capability from its Okena acquisition.

One of the best ways to secure your VoIP LAN is to separate it from the data LAN. This separation doesn't mean you need two completely different infrastructures, but it does mean using your switches' 802.1Q capability to place them in different virtual LANs. IP phones often have their own switches and VLAN capabilities. Place your IP PBXes in different VLANs from your other application servers, protecting the segment containing your PBXes with a firewall where possible. Wherever the two segments will interact — messaging systems, for example — the firewall should provide protection from attacks.

Be very selective about which IT staffers are allowed access to the core operating systems of your IP PBX servers and consider using intrusion-detection and prevention systems to monitor all voice servers and segments. Stay away from PC-based IP phones wherever possible because they are vulnerable to viruses, and create a link between your data and voice segment. Implement network address translation between the voice and data segments, with private address spaces for all IP telephony devices.

Authentication — anything from allowing access only from phones with known MAC (media access control) addresses, to personal IDs, passwords, and PINs — can prevent someone from placing a rogue phone on the network. Also consider using static IP addresses for your IP phones, mapped to MAC (media access control) addresses. And, of course, keep up to date with the latest security patches on all your voice mail and call-processing servers and make sure you have good virus protection. Who knows? Your extra efforts on behalf of IP telephony may have a welcome spin-off effect and increase the reliability of your network overall.

until now, voice is on the verge of becoming simply another network application that can integrate with other real-time applications — such as instant messaging, presence, and Web and videoconferencing — to enhance collaboration among geographically dispersed workgroups or partnering organisations.

VoIP can merge with Web, e-mail, live chat, and phone interactions in a multimedia contact centre that greatly improves customer service. And VoIP has the potential to integrate with ERP and other enterprise applications to speed up approvals that used to stop business processes in their tracks.

## VoIP under the bonnet

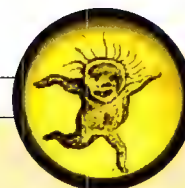
Unlike residential VoIP, enterprise VoIP is not simply about making cheap international calls over the Internet. Instead, it aims to replace the proprietary PBX phone systems and dedicated voice networks enterprises have relied on for years with standards-based



**"It's widely accepted that everyone will convert to IP telephony . . . The only question is when"**

**Lon McCauley, director of network services  
at IBM Global Services**





call processing servers or appliances that run digitised voice and call control over the packet-based IP data network. Also known as IP PBXes, these servers provide most or all the features of their legacy PBX predecessors and connect over the LAN or WAN with IP-enabled phone handsets.

IP handsets look and function exactly like their legacy predecessors, but VoIP vendors have recently added more PC-like features, such as colour displays, Web surfing capabilities, and limited access to data applications in some models. IP softphones provide the same handset capabilities in software installed on a PC, notebook, or sometimes even a PDA.

In addition to phones and IP PBXes, an important component of VoIP systems is the gateway, which is used to translate between IP and the TDM scheme used by legacy PBXes and the PSTN (public switched telephone network). Gateways provide the translation necessary to add IP phones to a legacy PBX, to connect two legacy PBXes over an IP WAN, or to provide an IP PBX with trunks to the PSTN.

Most IP telephony systems support a collection of standards from the ITU (International Telecommunications Union) called H.323, which defines how the different elements of an IP telephony system interact. H.323 includes a number of voice compression standards. A competing, up-and-coming standard called SIP (Session Initiation Protocol) comes from the IETF and approaches VoIP more from an Internet perspective. SIP can serve as standard for other Internet applications such as instant messaging, chat, and multimedia messaging as well and is expected to be a major force driving converged applications. More and more VoIP vendors have started to support SIP, as has Microsoft in Windows Messenger.

With maturing standards and broad industry support, there's no question that enterprises are taking VoIP seriously. According to a Meta Group survey of 276 North American companies, 62 per cent of midsize enterprises and 63 per cent of large enterprises (with 1500 or more employees) have implemented some form of VoIP. "It's widely accepted that everyone will convert to IP telephony," says Lon McCauley, director of network services at IBM Global Services. "The only question is when."

## Enterprise VoIP glossary

For many immersed in IT, the vocabulary of voice communications may be unfamiliar. Here are some of the most common terms.

**Codec:** A compression/decompression algorithm used in IP telephony and other streaming media applications.

**G.723.1:** An ITU-T Codec, used in many IP telephony systems, that has two associated bit rates: 5.3Kbps and 6.3Kbps.

**G.729:** An ITU-T Codec, used in many IP telephony systems, that has an 8Kbps bit rate.

**Gateway:** A network device that converts voice and fax calls between the PSTN (public switched telephone network) and an IP network in real time.

**H.323:** An ITU-T collection of standards used in VoIP (voice over IP) applications to define end points, gateways, and other IP telephony devices and their interaction. Precedes SIP (Session Initiation Protocol).

**IP Telephony:** The transmission of voice and fax phone calls over a packet-based IP data network; synonymous with VoIP.

**IP PBX:** The server that provides call control and configuration management for an IP-based phone system.

**IP Phone or Handset:** A phone system handset that connects to the IP PBX over an IP LAN. IP phones often look and function much like typical legacy corporate phone system handsets, but in some cases they also take on PC-like functionality.

**MPLS:** Multiprotocol label switching, an IETF set of quality-of-service labelling standards that ISPs use to manage different kinds of data streams based on priority and service plan.

**PBX:** Private branch exchange, an in-house telephone switching system.

**PBX trunk:** The shared communications path between the customer's PBX and the public network.

**PSTN:** Public switched telephone network, which is also called POTS (plain old telephone service).

**Q.Sig:** Q Signaling, a signalling standard for PBX interoperability used in the United States and Europe.

**RTP:** Real-Time Transport Protocol, the Internet protocol used by VoIP systems for streaming digitised audio and video across an IP network.

**SIP:** Session Initiation Protocol, an up-and-coming IETF signalling protocol for Internet conferencing, telephony, presence, events notification, and instant messaging. Competes with H.323.

**Softphone:** Software that provides IP phone functionality in a PC, notebook, or other computing device.

### The \$64,000 question

"When?" turns out to be a pretty big question, because the reality is that, unlike South-Trust, many enterprises are still in the VoIP pilot stage or have implemented VoIP in some parts of their infrastructure but not others.

Why the hesitation? A primary reason is that many of the dramatic savings vendors have promised to IT haven't panned out. Early in the VoIP game, it was thought that routing voice calls among company offices over the data network would produce significant savings in long-distance bills. Then business long-distance rates plunged. "When you can get long-distance

rates of less than 3 cents a minute, what's the point?" Blood says.

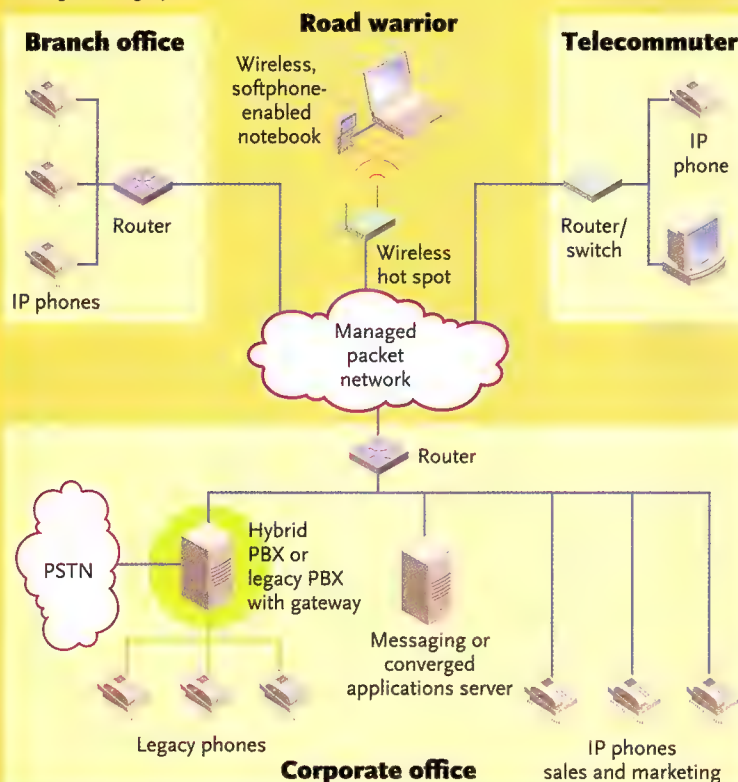
Then there were the productivity benefits that would come from unified messaging. All your e-mail and voice calls would sit together in one inbox accessible from your PC, notebook, or PDA. "Recent statistics show that if you're on the road, unified messaging saves you about 15 minutes a day," says Tony Jenkins, director of product marketing at Mitel Networks, "and if you're in your office, about seven minutes a day."

What about the dramatic management savings that would come from converging separate staff and infrastructures, voice and data, into one? It's true that moves, adds and



## Blueprint for VoIP Migration

In this scenario, a hybrid PBX or legacy PBX with a gateway is used to provide IP phones and VoIP to telecommuters, road warriors, and certain departments. Everyone else retains their legacy phones. Alternatively, all IP phones may be connected to IP PBXes using Q.SIG to bridge to a legacy PBX.



changes are much simpler with IP telephone systems than they are with a legacy PBX. However, it's also true that for most companies, TDM voice infrastructure already exists — and VoIP proponents have often underestimated the network overhaul required to make hundreds or thousands of IP phones work across an enterprise.

This usually involves a detailed analysis of call volume at various points in the day (particularly peak periods); upgrading to switched Fast Ethernet to the desktop with Power over Ethernet throughout, discovering and eliminating numerous bandwidth bottlenecks, and upgrading routers with new

OS versions and more memory to support VoIP. Then you have to configure network quality of service to help prioritise voice (which cannot tolerate latency) and quite possibly upgrade WAN connections.

The upgrades can be even more dramatic for large call centres. "When you do traffic engineering for a typical VoIP rollout, you can assume that people are on the phone 20 per cent of the time," says Elizabeth Ussher, vice president of technology research services at Meta Group. "But imagine the requirements of a large call centre with hundreds or thousands of people on the phone 85 per cent of the time and call monitoring. People get scared."

Security is also a major concern, particularly with the relentless rise in the network attacks. Many IT managers complain that the network monitoring and management tools that support VoIP are less than adequate. And merging voice and data staff has proven to be more difficult than originally thought. "In many companies you have a centralised IT and CIO, but the voice folks work out in the various business units and understand their requirements much better," Blood says.

"They can be absolutely critical in defining where end points should sit and what functions and service levels are required and their very sound advice is often a revelation for IT. It's the organisations that can get the voice and data staff to work together well that have the most successful VoIP implementations."

### VoIP's edge

In the face of such hurdles, how is enterprise VoIP being implemented today? It turns out that an increasingly popular scenario is a hybrid deployment that puts VoIP where it costs the least and produces the most benefit — leaving legacy phone systems in place everywhere else. "With a carefully targeted VoIP deployment you can get 70 per cent of the ROI with 30 per cent of the investment," says Jeanne Bayerl, director of business development at Alcatel SA.

That's where legacy vendors such as Avaya, Nortel, Mitel, Siemens and Alcatel excel. All offer integrated IP and legacy TDM-based phone systems that allow mixing and matching in every way imaginable, enabling gradual or partial IP implementation. This scenario can make a lot of sense if you want to save money by retaining many of your existing legacy phones and you already have a relationship with one of these companies.

The other side of the argument, however, is Cisco's all-IP strategy, which IBM's McCauley describes very well. "If I'm looking where this is going in the future and



**"We gave our telecommuters VoIP phones in their homes"**

Paul Shane, IT director at Milliman





## vendor directory

who is likely to win, I might want a company like Cisco that can thrive, grow and provide all its capabilities in an Internet world, especially if much of my data infrastructure is Cisco-based." Cisco's VoIP solutions can bridge to legacy phone systems, allowing you to keep both systems and many of your legacy phones in place, but you can't get the hybrid functionality in one system from the legacy vendors.

Greenfield deployments, particularly in new branch offices, are obvious candidates for full VoIP. You only have to build one infrastructure with one set of cabling, you get a chance to get your feet wet, and, if you wish, you can manage it all remotely. "Branch offices tend to have small PBXes and key systems with different levels of capabilities," Bayerl says. "Connecting them to the main PBX via IP gives everyone a consistent solution."

Most legacy phone vendors let you connect these offices over an IP WAN to your central TDM or mixed TDM/IP PBX using a gateway. If you're a highly distributed company such as SouthTrust, with hundreds of branches or lots of retail stores, a complete IP overhaul across the organisation can make a lot of sense particularly if, as in SouthTrust's case, you're already planning a major data network upgrade.

Another likely scenario is to provide IP phones to telecommuters and the parts of the staff, such as sales, that can benefit most from maximum mobility, at which IP excels. The telecommuter solution typically works with an IP phone and broadband connection that links to the main office PBX over a VPN. "We gave our telecommuters VoIP phones in their homes," says Paul Shane, IT director at Milliman, an actuarial and professional consulting services organisation that has rolled out a hybrid solution from Alcatel. "Now we can give them a direct dial number here at the main office and all their calls ring on their remote IP phone in their homes."

For more mobile road warriors, a soft-phone installed on a notebook can provide an office phone in any location, even a hotel room or a Starbucks with a Wi-Fi hot spot. Some systems let you set up all calls to ring simultaneously on your IP phone and cell phone. This flexibility means better customer relationships, because calls get to the intended person much more often.

Most of these vendors offer a mix of TDM-based and VoIP products so that VoIP can be applied where it provides the most benefit. For this reason, enterprise customers tend to choose the same vendor that sold them their legacy telephone equipment.

**3Com:** One of the first IP telephony players from the data side, 3Com offers IP telephone systems for small, medium, and large businesses. Its enterprise VCX V7000 product interoperates with legacy PBXs and accepts legacy handsets for a gradual migration.

**Alcatel:** This second-tier player offers IP phone systems with support for legacy devices to enable a gradual migration to IP. Its OmniPCX Enterprise IP PBX features native SIP (Session Initiation Protocol) support and Web services interfaces to integrate voice into business applications.

**Avaya:** One of the biggest players in the legacy and IP telephony space, Avaya sells legacy, hybrid, and complete IP phone systems. Avaya's Extension to Cellular feature rings incoming calls on desk and cell phones simultaneously and provides cell phones with office phone functionality.

**Cisco:** The principal IP telephony player from the data side, Cisco offers complete IP enabled phone systems that can bridge to existing phone systems and a variety of phone types including wireless and XML enabled handsets.

**Mitel:** A second-tier vendor that offers hybrid and complete IP phone systems, Mitel offers a unique Your Assistant app, which provides presence information and lets users manage all their communications from one interface. A YA Pro softphone offers multiparty videoconferencing.

**NEC:** This diverse tech giant offers phone systems with a modular architecture that supports legacy, hybrid, and completely IP-enabled phone systems.

**Nortel Networks:** One of the biggest players, Nortel offers legacy, hybrid, and complete IP enterprise phone systems to allow a gradual or complete migration to IP. Its Meet Me Conferencing application adds collaboration, presence, messaging, and video calling services and an i2050 Mobile Voice client runs on a PDA.

**PingTel:** This IP PBX supplier recently went open source with SIPxchange, a SIP-based, customisable IP telephony platform that runs on standard server hardware and includes WebEx, along with tools for integrating VoIP with enterprise applications.

**Siemens:** A major player in the legacy and IP space, Siemens offers hybrid and complete IP solutions for a gradual migration to IP. HiPath OpenScape is a suite of presence-aware conferencing applications and middleware that can be integrated with IBM, Microsoft, and SAP data application platforms.

**ShoreTel:** Formerly Shoreline, it offers all-IP phone systems using an architecture of distributed, centrally managed IP voice switches. Switches can also accept Shoreline's own analog phones.

**Spectralink:** A key player in voice over Wi-Fi, SpectraLink offers wireless handsets for both legacy and IP phone systems through service, equipment, and application providers.

**Toshiba:** A provider of legacy, hybrid, and IP-based phone systems, Toshiba's major products include the Strata CTX100 and CTX670 IP-ready PBX systems.

**Zultys Technologies:** This IP PBX vendor provides VoIP products that combine several functions in one box and work with third-party SIP handsets.

Some companies, such as JetBlue, have taken this mobility to the extreme, creating completely distributed, virtual-IP-based call centres in which their entire staffs are actually working with IP phones in their homes across wide areas of the US. "VoIP gives you access to labour pools that didn't exist before," Avaya's Jorge Blanco says. "You don't have to provide a roof over their head

and you can get highly educated people from any location." Jenkins points out that you can take advantage of time zones to extend call centre hours — and that IP phones are great for the growing category of "day extenders" who continue working when they get home from the office.

IP systems also allow better collaboration with branches and telecommuters, because



# Are you ready for VoIP?

Switching to VoIP seldom makes sense if your legacy phone system accomplishes what you need. Business or technology changes, however, often provide the perfect opportunity to make the most of VoIP:

## Phone upgrades

If you're getting ready to upgrade your current legacy phone system or sign a new lease or Centrex service contract, now may be the time to migrate to a hybrid or complete VoIP phone system.

## Too much diversity

Highly distributed organisations with many different types of phone systems and services incur lots of overhead. A single VoIP system may provide significant management savings.

## Blank slate

If you're moving to new offices or adding new branch offices and need to build a network from scratch, then you can easily build VoIP headroom into your network plans.

## Job requirements

Some disciplines, such as sales or marketing, can immediately benefit from the mobility and converged applications that VoIP provides. These are the places to start with a hybrid VoIP system.

## Network upgrades

Are you preparing for a major data network upgrade? If so, it might be time to set up your existing data network with the bandwidth and QoS to support VoIP.

## Virtual call centres

Many businesses reap major cost savings from highly distributed IP-based call centres that allow operators to work from their homes. VoIP provides inexpensive remote connections.

## Go left, go right

Does your organisation experience lots of moves, adds, and changes among employees every year? A conversion to VoIP may save you money.

they often provide built-in, easy-to-use audio conferencing. The benefits are even more dramatic when you start converging VoIP with other real-time applications such as instant messaging, document sharing, and Web conferencing. Presence functions let users see on their PC screens exactly who is in the office and who is on the phone, so you waste much less time leaving voice mails or directing calls to people who are not available.

It becomes much easier to pull people into instant virtual meetings, allowing for faster decision making. "IP allows the branch office to become much more integrated into the overall business," Bayerl says. "If Jane in branch X is the worldwide expert in widget Y, it's as if she were just down the hall." VoIP also makes it easier to implement multimedia contact centres where the same people handle Web, chat and voice interactions concurrently, and any of these communications can be routed quickly to available people with relevant expertise.

Many analysts and vendors agree that

the next phase will be integrating VoIP and other real-time communications into ERP and other enterprise applications. "By bringing real-time communications into business applications you can get over hurdles that used to stop a business process," Bayerl says. "For example, if a process needs finance approval, the application knows that Joe in finance is the person with authority that is currently available and it can make a connection."

Cisco offers phones with LCD displays that can replace PCs in retail and other environments that have limited data access needs. Cisco and Alcatel's phones support XML services that you can use to add access to billing, inventory, and other applications to the phone.

Another application that is generating excitement is VoIP over the wireless LAN, which can be useful in warehouse, hospital, and retail environments and possibly move into the mainstream office. SpectraLink has been involved in this category for several

years and Cisco is offering phones with Wi-Fi capabilities.


At the Spring 2004 VON (Voice on the Net) conference, Ericsson, Motorola, and Nokia demonstrated hybrid wireless VoIP and cell phones that allow users to make calls over Wi-Fi networks when available, whether in the office or at a hot spot on the road, and via cellular when Wi-Fi is not. "I'd be happy to get rid of the phone on my desk if I could have a single phone to take with me that could tie into all those converged applications," Meta's Ussher says.

## The voice choice

Such advanced benefits may be compelling, but not at the sacrifice of the typical call control features offered by a standard PBX. Fortunately, those who decide to take the plunge into VoIP will discover that IP-based phone systems now support all the basics — call forwarding, caller ID, speed dialling, call hold, auto attendant, and so on. And voice quality is no longer a question. For most customers, the place to start is with their existing PBX vendor, which can help them deploy a hybrid system that retains legacy equipment.

The nature of IP telephony also lends itself to hosted solutions. Verizon, AT&T and other players offer converged IP voice and data networks using a specification called MPLS (Multiprotocol Label Switching) that permits these carriers manage different service levels to accommodate voice. They've also been replacing TDM switches with IP — and some carriers have active plans to bring VoIP over the last mile directly to the home or business.

This approach will make it easier for carriers to provide their own VoIP services, including videoconferencing, unified communications, and contact-centre applications that could replace or complement whatever an enterprise has on site. Until now, carriers have mostly served as VoIP integrators or have provided IP Centrex services for small and midsize businesses.

Most agree that a major transition to VoIP in the enterprise is inevitable, but in most companies it will probably be a gradual process of greenfield branch office rollouts, deploying IP where it brings the most benefit, replacing obsolete legacy equipment, and gradually upgrading the data network infrastructure. Ultimately, every enterprise will find its own unique path to VoIP. 





# MYTHS *of* IT

Debunking long-held beliefs that could  
trip up your tech strategy

By Jack McCarthy

**TIME TO FACE REALITY.** Some of our bedrock assumptions turn out to be unfounded. And chief technologists can be subject to outdated beliefs as often as any professional. With that in mind, we've addressed six common IT myths and deconstructed them to give managers a clear view of some important assumptions that might otherwise throw a monkey wrench into their technology plans.

We set about tracking down the sources of the myths in question and found nearly all had little basis in fact.

For example, the myth persists that server upgrades matter. No way. Another myth: that business acumen is now the key to a successful CTO career. Not even close. And the one about 80 per cent of corporate data residing on mainframes? Check your maths.

Our dogged reporters found many more time-honoured tales to debunk, proving once again that while common wisdom may indeed be common, it is not always wise.



## Myth 1: Server upgrades matter

### REALITY: Don't pay extra for upgradability; you'll never need it

When was the last time you swapped out the processors on a production server? Have you ever ripped out a working system's RAID controller and substituted one with bigger cache? How about pulling out a machine's mirrored 18GB Ultra160 SCSI boot drives just to replace them with some 36GB Ultra360 spindles?

Despite the fact that top-tier server manufacturers boast about the field upgrade capabilities of their server platforms, it's a myth that anyone ever fiddles with a production system except to replace a blown part. If the server is less than a year old, chances are that it was ordered with the right parts and

doesn't need to be touched. If the server is more than a year old, nobody in their right mind is going to pop the top to crank the gigahertz.

To research this myth, I contacted all the tier-one server manufacturers. Not one would formally cooperate when asked for statistics regarding enhancements to their servers, either by sales of upgrade parts or through calls made by their field-service teams. Some said the data wasn't available. Others said it was proprietary information that couldn't be released for competitive reasons. All claimed to find the question surprising — and were interested in reading the results.

Fortunately, one vendor, who shall



remain nameless, forwarded the informal comments of a marketing manager, whose name was removed from the e-mail. The

## Myth 2: Eighty per cent of corporate data resides on mainframes

### REALITY: Try 50 per cent, or even less

It's past time to retire the myth that mainframes, those impenetrable-looking boxes understood by only a few IT magicians, still store 80 per cent of all corporate data.

Since their introduction in the 1950s, mainframes have largely been the unchallenged gatekeeper for all mission-critical corporate data. IBM became Big Blue, the colour of their early mainframes, by popularising mainframes with the company's hardware and operating systems — and eventually its line of applications — and then gained an iron grip on the entire market for decades.

But IBM's early monopoly of the mainframe market came under attack in the 1970s and 1980s. With the arrival of the first minicomputers and then microcomputers, which both held the promise of distributing centralised data closer to users doing the work, Fortune 1000 companies started demanding less reliance on mainframes.



Even with the desktop revolution, the notion that mainframes held at least 80 per cent of all corporate data remained intact through the mid-1990s in the minds of many.

But the birth of the Internet and the resulting flood of unstructured corporate data, such as e-mails, Web pages, Microsoft Word documents, and various technologies to manage and store this digital data, has led many to conclude that the stranglehold mainframes have held on corporate data has been slipping.

"In dealing with some of our clients, it is almost shocking to see some large organisations' financials being managed in a couple of Excel spreadsheets. Plus with all the blogs, instant messages, e-mails that do not pass through a mainframe, the amount of data now residing on mainframes is now probably in the neighborhood of 40 to 50 per cent," says Stephen O'Grady, senior analyst at RedMonk.

Reinforcing this growing trend, there is already an impressive amount of



manager's thinking echoed my own: "I believe the majority of customers purchase initially a server populated with the RAM and processors for future growth."

The manager added: "Many customers secure capital expenditures for the hardware and it is easier to purchase under this capital than to try to expense some more hardware down the line."

Another reason, of course, for not upgrading a system would include a fear of screwing things up, either by having hardware problems or by encountering difficulties with the operating system, drivers or applications. Given that there's going to be only a minimal performance improvement in going from, say, 2.0GHz to 2.6GHz processors while the rest of the server remains the same, what's the point in taking that risk?

If one could generalise, then one would say: the smaller the server, the less likely its hardware is going to be touched after

## Most likely upgrades

- Adding hard drives to empty slots
- Increasing memory
- Installing additional processors
- Adding a Fibre Channel HBA
- Installing Gigabit Ethernet adapters

## Least likely upgrades

- Upgrading RAID controllers
- Replacing functioning hard drives
- Replacing processors with faster ones

SOURCE: IDC

the system has been deployed. The chassis investment in an eight- or 16-way server might warrant enhancements to its I/O backplane. It also might make sense to add processors, if some of the sockets were initially unpopulated.

By contrast, it's hard to imagine anyone doing much to the hardware on a dual-processor 1U or 2U server or to a server blade, other than adding memory if needed. If that low-profile server can't handle the workload, the solution would be to replace it with a more powerful server or to add more servers to a load-balanced cluster. What about swapping the processors or adding a faster backplane? There's no ROI for spending good money on old servers.

When you're considering specifications for new servers, make sure the system fits your existing needs, and buy it with the headroom you anticipate requiring for the expected life span of the machine. Unless you have an IT culture that actually performs server upgrades, don't plan on performing any, and don't pay extra for features such as upgradable CPU cards capable of accommodating future processor platforms. You won't use them.

*By Alan Zeichick*

mission-critical financial data being generated, shared, and managed out of the sight of mainframes, says Dana Gardner, senior analyst at The Yankee Group. "Some corporate users now have Spreadmarts — big, honking flat files in spreadsheets used to manage many business processes and in a really decentralised way," according to Gardner.

And with the aggressive promotion the past few years of dozens of integration strategies that threaten to tear down the technology borders between mainframes and distributed platforms, some question the relevance of where data resides.

"Does it even matter any more (where corporate data resides) is the more relevant question. I think it has less meaning today than it did a few years ago. In fact, the more you hold onto that old axiom, the more you point out it is a proprietary and isolated environment. I wouldn't think anyone would want to continue promoting that idea," says Steve Josselyn, research director of the global enterprise server solutions program at IDC.

Another trend eating away at the mainframe's dominance is the rise of SANs and NAS appliances. Although many such envi-

ronments have direct pipelines into mainframes where data can be shared back and forth, the inclination of more and more corporate users is to plant data on SANs and NAS devices.

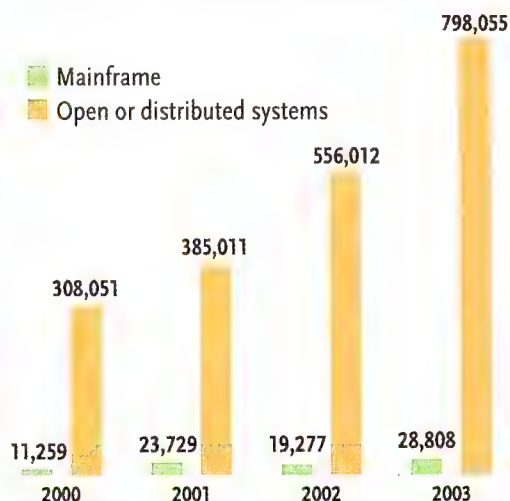
"Increasingly, the type of computer

becomes irrelevant with the local-area storage networks and the increasingly sophisticated storage that has come into play," says Hadley Reynolds, research director at Delphi Group.

*By Ed Scannell, Cathleen Moore*

## Open or Distributed Storage Capacity Dwarfs Mainframes

Mainframes account for less than 4 percent of all new storage capacity.



SOURCE: IDC



## Myth 3:

### All big shops run multiple platforms

#### **REALITY: This 'myth' is closer to fact than fiction**

As the New Wave band Devo said, "Freedom of choice is what you got. Freedom from choice is what you want." Were they right; is having no choice easier than having to decide for yourself? Does this principle apply to IT? Do enterprises seek heterogeneity rather than single-vendor solutions?

Experts agree this is not a myth. Some smaller companies are homogeneous, but larger companies inevitably become heterogeneous because of mergers and acquisitions, says Mike Gilpin, vice president and research director at Forrester Research. Besides, heterogeneity provides leverage. "It's always useful to have some other vendor that you can use as a threat," Gilpin says.

An official at Oblix concurs. "(IT personnel) like the leverage that they have by keeping it a heterogeneous environment," says Ken Sims, vice president of marketing and business development at Oblix.

"It's gone to the vast majority (being) heterogeneous," says David Bartlett, director of customer and partner programs at IBM's autonomic computing group. Formerly, the ratio of homogeneous to heterogeneous environments was about 80-20, but that ratio has at least reversed itself, Bartlett says. Companies' desires to be global, to operate on a 24/7 schedule, and to be on the Internet have led the way to heterogeneity, Bartlett says.

"Most customers today usually have a mix of server types," according to Jim Goethals, infrastructure simplification program manager at IBM's systems and technology group.

"If you look at what's typically on a desktop, for instance, that's going to be Intel. Depending on the departmental environments, they could have Intel-based servers or Unix servers, and when you get into the datacentre, you're going to find mainframes" as well as Intel and Unix systems, Goethals says.

Both heterogeneity and homogeneity have their pros and cons. One-vendor, so-called proprietary solutions bypass the hardships of having to make systems work together that were not built to do so. Proprietary solutions, however, tie a user to the whims of one or just a few vendors and offer limited options. So-called open solutions give users a variety of technology choices, theoretically driving down costs, given that multiple suppliers have to bid for your business. IT administrators, however, can have their hands full making everything integrate in an open world,

requiring development of an alphabet soup of standards.

Just what exactly is an open system? If you talk to any technology vendor, it will tell you its system is open, whereas all the competitors' systems are closed. The term open is usually applied to software or hardware that conforms to standards or features commodity parts.

Whereas most shops desire heterogeneity, some users prefer a single-vendor approach to at least part of their IT architecture. The city of San Jose, for example, recently has come under fire for making

## Myth 4:

### CIOs and CTOs have a greater need for business savvy than tech expertise

#### **REALITY: Tech chops matter more than ever**

Job No. 1 for the first CIOs to emerge in corporate shops almost 20 years ago was to make sure the business goals of the corner office were being served by the technologies put in place by the IT department. They were to be the bridge between two very different cultures.

#### **Simple enough.**

But during the past two decades, as technology has become inextricably entwined with a company's core business strategies, many CIOs and, in larger companies, CTOs have been forced to spend an inordinate amount of time on the business side of the chasm.

And as the number of technology projects has grown, many CIOs and CTOs



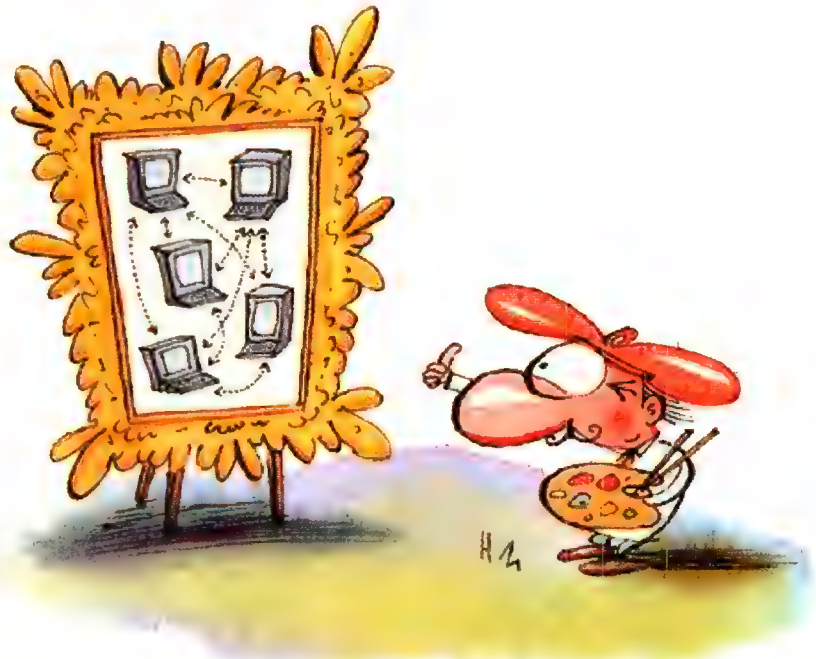


local networking vendor Cisco its supplier of choice for networking equipment at a new city hall under construction.

In his 27 years of experience, Joe Poole, an IT official at Boscov's Department Stores and manager of technical support, has watched his shop grow and diversify from a mainframe-only environment to a mix of a mainframe running VM and Linux plus RISC Unix boxes and Intel systems. Some applications such as the company's merchandise conveyor system and its graphical applications simply run much better on the newer platforms, he says. Poole believes that, these days, no one can continue to be a single-platform shop.

"Nobody can, and I don't think they will," Poole says.

*By Paul Krill*



have pushed more decisions for individual technology purchases and their methods of implementation further down the organisational ladder. Too often, those making product decisions have been purely focused on technology and so have made tactical decisions without enough regard for how those decisions will benefit overall business goals.

"One of the top reasons I think some IT projects go off course technically and/or over budget, if not outright fail, is the lack of guidance from upper management on the technical side. Sometimes they shouldn't be so fast with the rubber stamp until they get a better grasp on some of the technology they are asking their people to implement," says Joe Johns, a LAN administrator at a large bank in North Carolina.

Well, so much for the myth that CIOs and CTOs need more business savvy than technical expertise. In fact, there seems to be some concern from industry observers that CIOs and CTOs need to spend more time gaining a deeper understanding of technologies and products, particularly emerging ones.

One of the major reasons CIOs and CTOs have been forced to focus more on business than on technology decisions has been the dotcom bust. With so much

aimless spending on technology in the second half of the 1990s resulting in little ROI, many CEOs are demanding short-term if not immediate returns on any sizeable tech investment.

"A lot of companies are in reactionary mode right now," says Will Zachmann, president of market research companies Canopus Research and Agylity. "Now that we are in the dotbust era, the pendulum has swung back hard the other way, and it has everyone afraid to do much of anything technically."

But concentrating so narrowly on short-term financial gain forces the majority of CIOs and CTOs to defer the steady

implementation of long-term technology visions until better economic times arrive. Such delays will only put them at a competitive disadvantage to those who are striking a more reasonable balance between ROI and high-tech investments.

"Those CEOs and CIOs who are joined at the hip and who want only short-term ROI are myopic about where IT should be going technologically. An organisation that really understands IT technologies and what to do to turn (those technologies) into genuine competitive advantage can be in a great position right now," Zachmann contends.

*By Ed Scannell*

## The skills IT executives need

- Ability to think independently instead of simply relying on experts' opinions
- Familiarity with a wide range of technologies
- Installing additional processors
- Ability to communicate how the organisation should leverage technology to practical advantage
- Commitment to continuing education in both business and IT
- Focus on business results rather than personal gain
- Willingness to take reasonable risks and to learn quickly from mistakes
- Flexibility to change with the technology and the times

SOURCE: WILL ZACHMANN, PRESIDENT, CANOPUS RESEARCH AND AGYLITY



## Myth 5: Most IT projects fail

### REALITY: It all depends on how you define failure

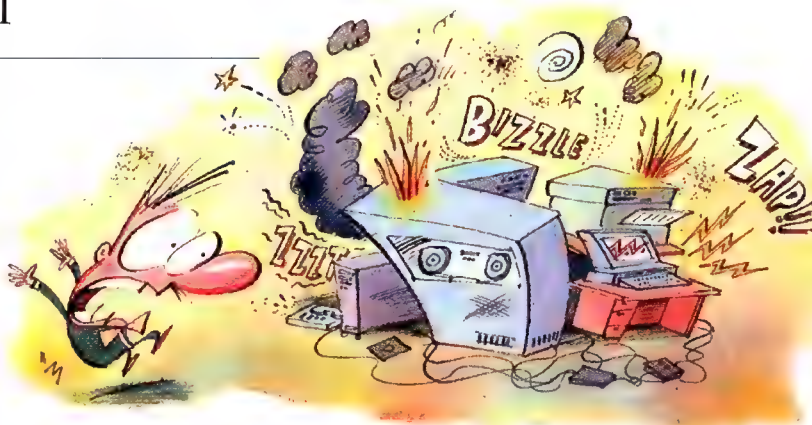
Do most IT projects fail? Some point to the number of giant consultancies such as IBM Global Services, Capgemini and Sapient, who feed off bad experiences encountered by enterprises. "Sapient is a company founded on the realisation that IT projects are not successful," says Sapient CTO Ben Gaucherin.

Others counter by saying failure is relative. Sure, many projects have minor system glitches or come in over budget, but they don't rise to the "failure" status that would seriously harm the user's business.

"If a project is three months late or 5 per cent over budget, that may be a disappointment, but it's not a failure. That's the case with most IT projects," says Jim Shepherd, vice president of research at AMR Research and co-author of AMR's 2004 ERP report.

Although there may be myriad ways that projects can experience problems, actual implementation usually succeeds, Shepherd says.

The Standish Group, which exists solely to track IT successes and failures, sets out



very strict criteria for success. For its Chaos Report, The Standish Group surveyed 13,522 projects last year and showed that unqualified project successes are well below 50 per cent, 34 per cent to be exact. Out-and-out failures, defined as projects abandoned midstream, are at 15 per cent. Falling in between the two are completed but "challenged" projects. The report says challenged projects represent 51 per cent of all IT projects and are defined as projects with cost overruns, time overruns and projects not delivered with the right functionality to support the business.

The level of success can be tied to the degree of user involvement, executive management support, and having an experienced

project manager, in that order, the report says.

For IT project consultancy Sapient, the key ingredient to success or failure rests on the processes a company puts in place to manage risk. In other words, it's essential to identify a point of failure before it brings down an entire project. "The larger the project, the greater the chance of failure, and therefore the more effort you want to put behind managing risk," Sapient's Gaucherin says.

Gaucherin adds that potential problems can be managed by "bubbling up risk", a methodology for identifying problems before they get out of hand. To that end, projects are put on a value chart with plot points becoming project milestones plotted over a time line.

"As soon as we start veering off, we ask (ourselves) why," Gaucherin says.

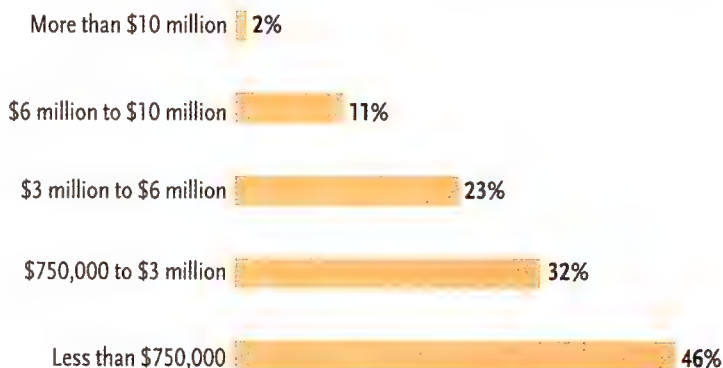
Probably the news with the most damaging implications for IT projects is not the number of those that were abandoned, rather it's those that were completed but offer fewer features and functions than originally specified, says Karen Larkowski, executive vice president at The Standish Group. "Content deficiencies of more than 50 per cent would most likely be considered a failure," she says.

But AMR's Shepherd has another view, which he says is more realistic. "Failure would be a situation where orders stopped being taken, or the books couldn't be closed, or the project itself was simply abandoned," Shepherd says. "That's rare."

By Ephraim Schwartz

### Project Success

Smaller initiatives fare better at reaching goals than larger projects do.



SOURCE: THE STANDISH GROUP



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## Myth 6: IT doesn't scale

**REALITY: Virtually any technology is scalable, provided you combine the right ingredients and implement them effectively**

At one time or another, nearly every kind of information technology has been judged and found wanting. The failures are often summed up in that most damning of epithets: "It doesn't scale." The reason, of course, is that at one time or another, for one reason or another, every kind of information technology has failed to scale.

recent furore that erupted when Friendster, a social-networking service, switched from J2EE to PHP and improved its response time dramatically. Reacting to a long history of allegations that "scripting languages don't scale", advocates of PHP could now gleefully assert, "Java doesn't scale".

The debate generated a lot of heat but also shed some light on what PHP's inventor, Rasmus Lerdorf, calls its "shared nothing" architecture. Because PHP is stateless, he explains, potential bottlenecks

factor. "Part of the mandate of EJB is to be stateless," says Sun Distinguished Engineer John Crupi, whose team helped redesign eBay. The revised architecture used stateless session beans, avoided clustering, and focused on a set of business objects backed by eBay's highly customised database tier.


In the end, scalability isn't an inherent property of programming languages, application servers, or even databases. It arises from the artful combination of ingredients into an effective solution. There's no single recipe. No matter how mighty your database, for example, it can become a bottleneck when used inappropriately. Many dotcom-era Web publishers learned that lesson the hard way when their database-driven sites were crushed by the Slashdot horde.

The current blogging revolution represents, among other things, a more optimal balance between two synergistic methods: serving dynamic content from a database and serving cached, static content from a file system.

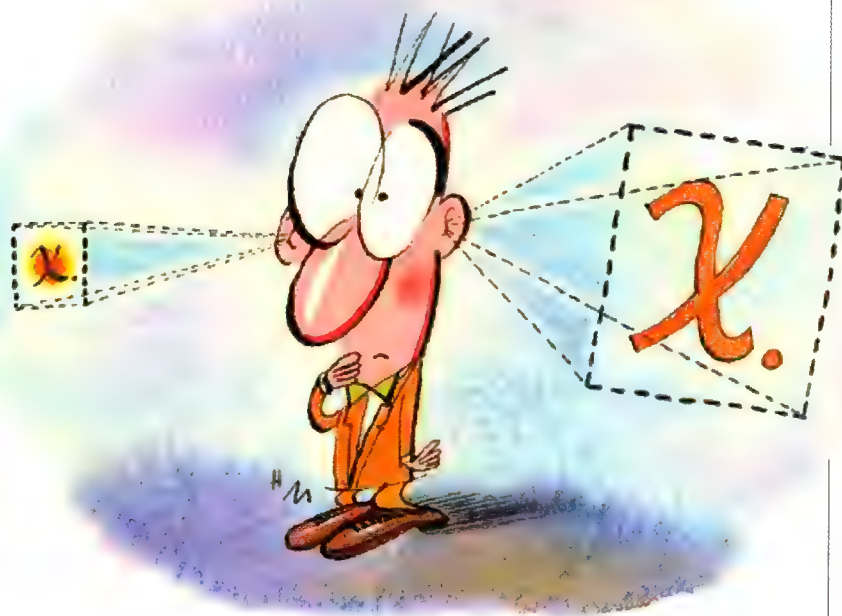
It's tempting to conclude that the decentralised, loosely coupled Web architecture is intrinsically scalable.

Not so. We've simply learned — and are still learning — how to mix those ingredients properly. Formats and protocols that people can read and write enhance scalability along the human axis. Caching and load-balancing techniques help us with bandwidth and availability.

But some kinds of problems will always require a different mix of ingredients. Microsoft has consolidated its internal business applications, for example, onto a single instance of SAP. In this case, the successful architecture is centralised and tightly coupled.

For any technology, the statement "X doesn't scale" is a myth. The reality is that there are ways X can be made to scale and ways to screw up trying. Understanding the possibilities and avoiding the pitfalls requires experience that doesn't (yet) come in a box. 

*By Jon Udell*



Unfortunately for the victims tarred with that brush, scalability is a wildly imprecise term. Applications may be expected to scale up to massive server farms or scale down to handsets. And size is only one axis of scalability. Others include bandwidth, transactional intensity, service availability, transitivity of trust, query performance, and the human comprehensibility of source code or end-user information display.

There is no magic bullet that will slay all of these demons, but that doesn't stop us from trying to find one. Case in point: the

are pushed out of the Web tier and into the database tier. If you're using Oracle, Lerdorf says, scalability is proportional to "how big a cheque you write to Oracle every year", and if you're using MySQL or PostgreSQL, "it comes down to whether you have configured replication correctly and have a nicely architected tree of database machines".

Of course, Java can be used in a similar way. When eBay made its widely publicised switch to J2EE, the statelessness of the new architecture was cited as a critical success



# Why ICT needs EMOTIONALLY INTELLIGENT team leaders



By John Batros

*“Soft skills have hard consequences”*  
— Goleman

## Synopsis

This paper will argue that emotional intelligence [EI] is a necessary if not sufficient condition for ICT team leaders.

It will draw upon recent research into the EI of Australian managers and use Swinburne University of Technology's Genos EI model to introduce the concept. Using the five dimensions of the model as a platform, arguments will be mounted for the positive effects for leaders and followers in all groups, in particular ICT teams.

EI is a human competitive edge, which can be leveraged for leadership development, promotion and synergistic results. It affects bottom line outcomes and team members' satisfaction.

This paper will argue that ICT leaders will need to become more emotionally intelligent to ensure that optimal expression of emotion is brought to bear on rational ICT decisions in groups to maximise productivity.

## Introduction

For too long, professional managers have eschewed the soft skills. Pejorative attacks on human relations, “tree hugger”, “airy fairy” and “touchy feely”, were regularly heard in the dry downsizing 80s and “tech boom” 90s. These attacks are driven by anxiety about the difficulties of managing people face-to-face.

In addition, influenced by a brilliant and ever expanding technology, many ICT professionals have retreated into isolation and individual pursuit. Learning to lead and follow in teams has been

difficult, especially as messy human beings with irrational emotions must be faced if synergistic outcomes are to be gained from ICT project teams.

Optimal levels of emotion assist rational ICT decision making. Neither too much nor too little emotion is optimal. The emotional centres of the brain are an integral part of what it means to think, reason and to be intelligent. Emotion is absolutely necessary for us to make good decisions, take action to solve problems, cope with change and succeed [Caruso & Salovey 2004 flyleaf].

The new ICT team leader will be psychologically present, passionate about her work and will manage her people in such a way that they can bring themselves to their roles. She will enable each team member to be maximally powerful.

## Genos EI and the Swinburne research

Professor Con Stough and Dr Ben Palmer have developed through extensive research of Australian executives and workers, a five-dimensional model of emotional intelligence, Genos EI. They are:

*Emotional recognition and expression (in oneself)* —

The ability to recognise one's own feelings and emotional states, and the ability to express those inner feelings to others.

*Understanding of emotions external* —

The ability to identify and understand the emotions of others and those manifest in external stimuli (ie, workplace environments, staff meetings, literature, artwork etc).



#### *Emotions direct cognition —*

The extent to which emotions and emotional knowledge are incorporated in decision making and/or problem solving.

#### *Emotional management —*

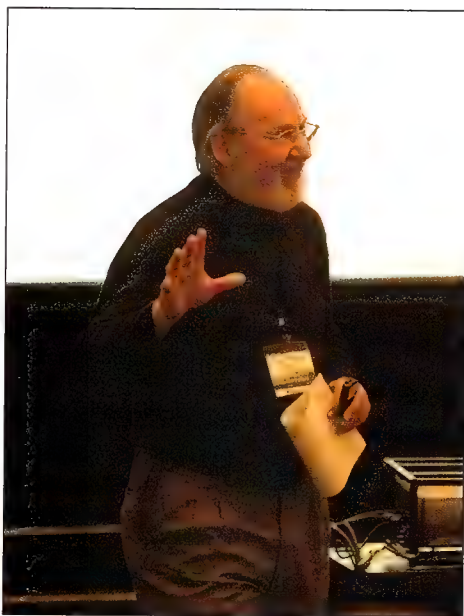
The ability to manage positive and negative emotions both within oneself and others.

#### *Emotional control —*

How effectively emotional states experienced at work such as anger, stress, anxiety and frustration are controlled

Each person obtains a percentile ranking on each dimension from the application of the Genos EI instrument (which can be taken online). This is not an absolute measure but places the participant along a continuum related to scores of a large sample of Australian executives or workers.

Working with a consultant, an ICT manager can determine the meaning of his profile and determine whether it is appropriate for his context. Development plans can be created with the person.



## FIVE DIMENSIONS OF EI: GROUND RULES FOR ICT TEAM LEADERS

### 1. BE AWARE OF YOUR EMOTIONS AND EXPRESS THEM

Be psychologically present! For too long we have been taught by our organisations to keep our feelings out of it. As if we could! Valuable psychic energy is wasted in the attempt and reduces creative possibilities. To be psychologically present means being aware of my feelings and thoughts in the moment. I am then able to bring both into the service of the task.

Bring my self to the role! Recent theory (Hirschhorn 1988, 2002) recommends that we bring ourselves to our roles. The old Descartian question, "Should I play my role at work, or be myself at work?" is

replaced with "How can I bring myself to my role?" That is, "How can I both play my role *and* be myself in role?"

There are three zones of awareness — the Outer Zone (everything outside me including others and the tasks we have to do), the Middle Zone (thinking, judging, intellectualising, analysing, blaming) and the Inner Zone (feelings, emotions, sensations).

Unless an ICT leader expresses her feelings she will be mistrusted. To be present to my people, it is necessary first to be present to myself. I must be aware of my feelings as well as thoughts and the external environment. Expression of my feelings to others lets them know where I am coming from and by self disclosure invites reciprocal self disclosure. Increased mutual openness leads to trust.

### The transport engineering case study

I administered Genos EI to the general manager, transport engineering, of a large international company. His report showed him at the 8th percentile on dimension 1 [emotional awareness and expression] and the 99th percentile on recognition of emotion in others. He could read others like a book but did not reveal himself to them.

**Be psychologically present! For too long we have been taught by our organisations to keep our feelings out of it. As if we could!**

The GM had a strong engineering background with significant ICT components. When I explained the dimensions and asked him about them, he was puzzled. Yes, he was great at negotiating multimillion dollar contracts because he could read the other party's body language with great accuracy. However, his own team did not trust him and were demotivated. Further he had a European background and claimed to be a very passionate person.

The penny dropped; he said: "At home I express emotions a lot; but at work I have learned not to express my feelings. My people cannot see where I am coming from and distrust me don't they?" What a wonderful self-diagnosis.

He could now decide how much to express his feelings in order to make better contact with his team members and build trust.

### Contactful communication, here and now

When you and I are aware of our three zones of awareness and express them, we communicate contactfully, here and now. This contact releases psychic energy in the present moment. In turn, these energies combined produce synergy.



### Case study: "I am feeling alarmed..."

Tom, a member of an ICT organisation whose culture prohibited "feeling talk" and "I language", was attending a strategy meeting attended by 10 people. He noticed that the meeting was dull and lifeless although the decisions to be made were critical to the future effectiveness of the organisation. Only one or two members of the team were speaking at the meeting.

Tom noticed that he was becoming increasingly alarmed at the direction the emerging plan was taking. Taking courage, he stood up and said: "I feel alarmed at the emerging direction of the strategic plan" (and waited for the crunch).

To his surprise, three others came to life: "We feel alarmed too." With that, the whole team came to life and the strategic direction was radically changed.

As they were leaving the meeting, several members approached Tom and said: "Thank you for speaking up. I was worried about the decision, but no way would I have expressed my feelings unless you had expressed yours. I thought I was the only one to feel this way."

Reason may be slave to the passions (Hume), but without passion, reason is bereft and sterile. Expressing feelings is a team skill, necessary for trust and openness; awareness and expression of emotion are necessary but not sufficient conditions for team excellence.

The ICT team leader must become an aware expresser and lead the way in modelling these behaviours, encouraging others to learn them.

## 2. RECOGNISE YOUR ICT TEAM MEMBERS' EMOTIONS AND EMPATHISE WITH THEM

- Empathy: Recognising others' emotions helps ICT leaders enter the worlds of their followers. They feel accepted for "who they are, even that they are" (Hycner & Jacobs, 1995).
- Understanding emotion in others produces trust: People feel understood. You do not have to agree with what they say, but show that you truly have listened and understood. "Seek first to understand, then to be understood" (Covey 1989).
- Reduces defensiveness: ICT team members' defensiveness is reduced enabling them to be psychologically present and therefore release their energy for the task at hand.
- Allows thoughts to find thinkers: The reduced anxiety in the team enables rational thinking.
- Recognising emotion in others includes and acknowledges their worth in the team. Everyone has a deep need to be met, recognised, respected and appreciated.
- Leader as empathiser: ICT team leaders should be able to recognise emotions in others. In so doing they bring EI to bear on the leadership role.

## 3. USE YOUR FEELINGS TO INFLUENCE DECISION MAKING IN YOUR ICT TEAM

- Feelings enhance rational judgment. One of the great insights of recent research is that optimal levels of emotion inform rational decision making [Nussbaum, 2001]. While it is true that too much emotion, like too much conflict in a team, is

bad for group decision making, it is equally true that *too little emotion* is bad, too.

- They are doorways to meaning. Our emotions store hard-won experiences; they are results of our history and development as a person
- Emotions are irrational but not meaningless. In B-School, we have been indoctrinated that science and rational thought are the only ways to truth and that passions and emotions should be eschewed. They can only interfere. Feelings are not meaningless and are well-springs of creativity. Ignore them to your cost.
- Gut feel produces intuition. When team members pay attention to the irrational, new ideas emerge by themselves. "Lose your mind and come to your senses" — (Herman & Korenich, 1977.) Let us take rationality as far as it can go, but then let us listen to our guts. When we allow ourselves to become aware of our emotional reactions without analysis, they will inform our judgments.
- Emotions produce synergistic outcomes for the ICT team. When ICT team members are freed of their intellectual shackles and fear of being judged incompetent or stupid, creative intuition in individuals and the group is released.
- The leader as team facilitator: The successful ICT team leader does not lose his or her critical faculties, but suspends them occasionally, inviting emotional expression to excite team members to their best efforts. Brainstorming is one process which invites right brain activity, intuitive felt responses as well as thoughtful ones. Lead creativity first; critique later.

## 4. MANAGE THE EMOTIONS IN INTERPERSONAL RELATIONS WITH YOUR ICT TEAM MEMBERS

### The leader as container:

- The age of anxiety did not end in 2001
- The downturn in the ICT industry is still having its effects
- No longer can team members feel as secure as they did in the 1990s
- Downsizing, restructuring and the general view that loyalty has nothing to do with the workplace, create anxiety, competitiveness and uncertainty.
- Often these factors are accompanied by increasing workloads under the Newspeak of "doing more with less", "churning" and "work smarter not harder".
- Leaders can ignore these anxieties or manage them. They are often unaware that feelings of frustration, anger and resentment are undermining teamwork.
- Team leaders will need to hold the tensions of their people while managing their own anxieties if their team are to be optimally effective. They will have to be able to give hope to the ICT team that its primary task can be achieved under stressful conditions.

### Assertively managing conflict:

- Conflict must be viewed as an asset! It must not be avoided, crushed or smoothed over
- Neither aggressive nor passive, the new ICT team leader will invite conflict to be fully expressed so that the latent energy within it can be turned towards team purposes.

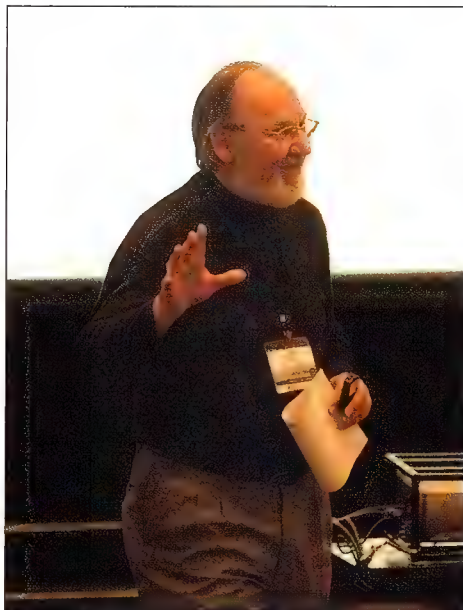


- The EI team leader will need a range of assertive skills which respect the rights of all parties in order to manage interpersonal conflict and produce Win-Win outcomes.

**Facilitate the storming stage of group development; teams grow through five stages of group development [Tyson, 1998]:**

- Forming (inclusion and acceptance)
- Storming (conflict and control)
- Norming (cohesion and conformity [groupthink])
- Performing (team work and achievement)
- Adjourning (separating and celebration at the end of the ICT project).

ICT team leaders must adapt their management styles to each stage of group development. Each requires emotional



management so that the social or maintenance needs of the team are met. Only when people's needs for inclusion, safety, influence, belonging, acceptance and respect are met can they get on with the task. It is critical that ICT team leaders have highly developed interpersonal skills as well as knowledge of their domains.

#### **Treating feelings as data about the team**

- **Projection:** The team members unconsciously split off their feelings and project them into the leader. The EI leader becomes aware of his or her emotions and recognises that they are not all his or hers. They treat their own affective states [feelings] as data about how their followers might be feeling and check it out.
- **Metabolising emotion:** By not "acting out" difficult feelings, but containing them, anxiety and anger can be turned into hope and team effectiveness

#### **Case study: Team building with the partners of International Consultants**

I was invited to conduct a two-day training program in interpersonal and team skills for IC. IC specialised in process re-engineering, organisation development and systems change involving ICT. The managing director wanted the program to be conducted with the 10 local partners. Unknown to me, they saw it as a team development workshop. At the end of the first day one partner said at dinner, "Why don't you open it up to what we want to do tomorrow?" Naively, I took the bait.

Next day, I opened the forum with the partner's suggestion. It was agreed to create an agenda there and then. I went to the flip charts and began to write their suggestions which flowed readily. As time went on, I noticed I was feeling increasingly full in the stomach and commented on this in passing.

Half an hour passed and I now felt both full and worried. I was doing almost all of the work and we were getting nowhere. This could go on all day...

I hypothesised that I was "filling up" with their projections, including their split off ability to lead.

I decided to quietly walk off-stage, sat behind the group and said,

**Expressing feelings is a team skill, necessary for trust and openness; awareness and expression of emotion are necessary but not sufficient conditions for team excellence**

"I think I am doing all the work. This is your problem; I am not speaking for the next 30 minutes." My anxiety went up. Could I do this?

One or two questions were directed to me. "What do you want us to do?" I did not answer. One partner said: "He's not going to answer you know."

They solved the problem in the next 10 minutes.

By becoming aware of my own feelings, I treated them as data about the group. By controlling and containing them, I was able to choose an effective course of action which returned leadership authority to the partners. [In this case all five dimensions of Genos EI were at play!]

The Leader as Healer: The ICT team leader who pays attention to the heart as well as to task issues will be more effective.

#### **5. APPROPRIATELY CONTROL YOUR OWN EMOTIONS AS ICT TEAM LEADER:**

**Control your own emotions when you are severely anxious:**

- Uncontrolled emotion is ineffective
  - ☐ Aggressive emotional outbursts can frighten people or ignite hostility



□ Denying, avoiding or deflecting strategies do not work either

■ Over-controlled emotion can be ineffective

Air Traffic Control team leaders are high on EC: They can keep calm while aware of their own feelings and those of their followers. They consequently can manage their and others' emotion and act constructively in times of crisis.

Change irrational thinking in order to reduce your anxiety: Since our thoughts affect the way we feel, changing thoughts that cause anxiety can reduce it to manageable levels.

Reduce catastrophic thinking: If you can learn to become aware of thoughts and beliefs that are catastrophic, and alter them for more realistic beliefs, then emotions can be controlled and effective action can be taken.

Maintain appropriate levels of emotion to enhance performance: Again, it is optimal levels of emotion, not absence of emotion that is the desired state. No emotion can be a symptom of being out of control, too detached from the tasks and the people who have to do them; psychological absence.

Stay aware of your emotions: Another powerful means of controlling emotion is simply to stay aware of them. Go deeper in. Accentuate them. The paradoxical theory of change entails that by becoming aware of what is the case, change automatically occurs by itself. 'Planned change never ever functions . . . [Perls, 1969].

Anxiety is suppressed excitement. By staying aware of my feelings [Dimension 1] I will often find what is behind them. One feeling changes into another as I pay attention to it. Anxiety becomes excitement, excitement becomes an idea, the idea suggests a thought, the thought entails action, action leads to team effectiveness. Leaders of ICT teams will respect their own feelings, especially when they feel out of control. They will contain them but not ignore them so that they will act effectively rather than fight or flee.

## Conclusion

I am arguing that increasing competence in the five dimensions of Genos EI will enable ICT teams to be much more effective. Both followers and leaders need to be EI to maximise value.

I am not arguing that EI is all there is to it. On the contrary I believe that rational task process skills and knowledge are as valuable and necessary now as they have ever been. I do not advocate the denial of business and strategic planning, decision making, goal setting, problem analysis, potential problem analysis, world's best practice, KPIs and the formulating of purpose, mission and vision statements.

I argue that the factor of production which is under-utilised is Emotional Intelligence. It complements rational judgment and other management processes. Goleman [1998b] claims that EI has twice the effect on leadership than IQ. Both are necessary. All of those who must get their work done with and through others (ICT project team leaders, consultants, salespeople, software architects, programmers, operations managers, systems designers, suppliers and customers) must pay attention to their level of EI in order to leverage the human potential of individual people, teams and the organisation as a whole.

Information and Communications Technology needs emotionally intelligent team leaders, for soft skills have hard consequences (Goleman).

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This paper was delivered at the ACS National Conference, Melbourne, September 2004.

John Batros will facilitate a two-day workshop called "Successful and Productive Teamwork" for the Victorian branch of the ACS on October 27 and 28. Details at [acsvic.com](http://acsvic.com)



# Holistic education essential – to a degree



By Beverley Head

A third of the skills nominated as essential in current ICT job advertisements are interpersonal, non-technical skills

**THIS STATISTIC**, unearthed by the most recent ICT Skills Snapshot, suggests that even a first class honours degree in computing may not be enough to land you a job, if you can't communicate, or display an ability to work as a member of a team. As the Snapshot reveals: "As the demand data has shown, interpersonal skills (particularly communication skills) are mandatory; so graduates from a technically focused course may find it more difficult to find a job."

For the universities, this adds a further layer of difficulty in terms of keeping up with the requirements placed on graduates by employers. Already pressured to give students a good grounding in theory, while exposing them to current marketplace tools and techniques — they are now going to have to equip them to work as effective team members and communicators as well.

Brian Donovan is the chief executive officer of the IT Skills Hub which prepares the Snapshot, and he believes that one of the real pressure points now being faced by the tertiary education sector is "around the area of business skills and interpersonal skills. Employers now want people who bring business and technologies together. What we need is a reflection of that in the curriculums."

While Donovan says that there are some emerging examples (for example at Swinburne University of Technology, University of Technology Sydney and Monash) of courses which combine technical content with development of interpersonal skills, "it is still patchy and we need a more concerted effort.

"Industry is feeling the pinch and they need people to be more versatile," he notes.

Universities already grapple to balance education and training. They know they need to provide students with a good grounding in theory and principles, and interlace that with practical exposure to current tools and technology. At the same time they understand that the traditional eight-year cycle of curriculum refresh is too slow for ICT courses, and so need to tinker continually with content and tools to ensure that each intake of students is studying the most relevant content possible.

The reasoning behind their attempts to balance theoretical grounding and practical exposure to current generation tools is sound: an undergraduate exposed only to the theory probably won't be much use to an employer for some time — where one exposed only to current tools will quickly find themselves outdated and hard pressed to find work. A mix of both is the best approach.

Alice Watkins, director of industry liaison at the Faculty of Information Technology at UTS, confirms that "the goal of a perfect match between industry needs and what education and training are able to provide at any point in time is an elusive one. There is a time lag between recognising the technology skills needed, developing and marketing appropriate courses and then completing the training of the students."

Elusive as the goal may be, it is still being sought in our tertiary institutions.

As the Skills Snapshot notes, Victoria is the largest source of ICT university enrol-

ments in Australia with around 35 per cent of the total Australian population of students. (In 2003 77,004 students were enrolled in tertiary ICT courses in Australian universities). Among Victoria's ICT institutions, Monash stands out, being one of the largest such faculties in the world.

Professor Ron Weber, dean of the faculty of IT at Monash, is attempting to address the speed at which curricula change by implementing incremental changes throughout a course's life, making it more relevant with each small change without sacrificing long-term quality. He says that besides balancing theory and practice, the university is also attempting to ensure students get valuable exposure to real-life situations which will provide them with those much sought after interpersonal skills.

"One degree is the Bachelor of Business Systems which has an industry-based learning component," says Weber. Far more rigorous than the old sandwich style degrees where a student was sent out into industry to flounder on their own for six or 12 months before returning to the university fold, the industry-based learning components feature very directed learning which is closely monitored by the university, says Weber.

He acknowledges that such a component is not available to each student, but says that by harnessing techniques such as project or studio classes, every student gets the opportunity to work in teams and learn interpersonal skills.

"One of the foci we have in terms of industry-based learning is that parts of the



course depend on teamwork, and teach students how to endure the frustrations of such teamwork," he says. Such experience better prepares graduates for real-world situations.

Something similar is in train at UTS where students undertake a full-time practical workplace experience for up to a year of their degree course. Says Alice Watkins: "The UTS IT degree programs have also established strong links with industry to ensure that as far as possible teaching is relevant to contemporary needs. Students therefore graduate with the capacity for longer-term high-level development as well as with some relevant work-ready skills and experience."

Watkins also points to the strong demand for career professionals who will rise through the ranks of the industry and the value that a university education can confer on them. "These professionals need to understand how the big picture hangs together and to be able to drive it forward. To do this they


also need skills including communication, problem solving, project management and critical analysis which are all developed in a university education."

Michel Hedley, national manager of IT workforce policy for the Australian Information Industry Association, confirms this trend emerging in universities to incorporate many more business skills into their ICT curricula. "They are introducing teamwork and personal research and communications skills so that it is more of an IT professional that emerges," he notes.

At the same time the osmosis of IT skills into many other disciplines means that graduates with significant IT skills are emerging from marketing or commerce faculties, he says. And a new associate degree which is due to be piloted with overseas students at TAFE in NSW next year may also give university students a run for their money in the jobs stakes.

While the Hub's Donovan acknowledges

that in the current climate there is possibly a small oversupply of ICT personnel, there are still difficulties finding people with particular skills. He nominates IT security and IT risk management as particular points of industrial pain being only slowly addressed by universities. Donovan says that in the case of IT risk management he is aware of only a single course — a Masters at the University of Southern Queensland. Next year of course there could be dozens of other courses, but by then demand may also have moved on.

But whatever the current fad, Alice Watkins remains adamant that a holistic approach to education be maintained. "What is important for the IT industry as a whole is that a healthy balance exists between short-term skills training and longer term education," she says. 

*Beverley Head is a journalist who has been writing about the business of information technology for the last 20 years.*

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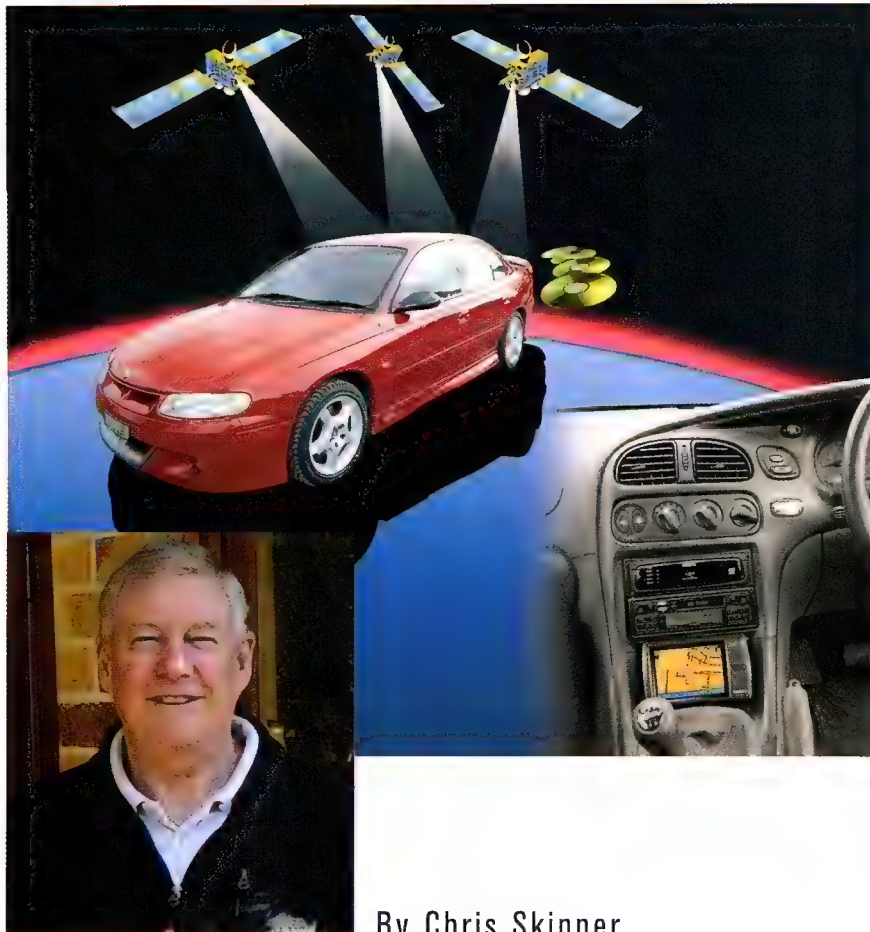
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*ICT Professionals Shaping Our Future*



# ICT must drive TRANSPORT'S Future



The term Intelligent Transport Systems (ITS) was coined a decade ago but is only now coming to be widely seen as the next big thing after internetworking, wireless telecommunications and e-commerce

By Chris Skinner

**TRANSPORTATION** is undergoing a quiet revolution in its quest for enhanced safety, security and efficiency in the carriage of people and goods, both in the services offered and in the infrastructure, vehicles and, most of all, the information and control systems that make it all work.

Challenges for ICT professionals abound in ITS: everything from business process modelling and information architecture to verification of the non-functional requirements for distributed system performance and availability. Perhaps the most important challenge is to attract ICT professionals to the throng of transport planners, civil and electrical engineers, and equipment suppliers

and integrators to add value in the logical modelling and design and delivery of information and deployment architectures for ITS.

So far, the track record of ITS deployment has been mixed, the result of many factors including uncertainty regarding benefits to be obtained. Some ITS projects have been manifestly successful while the user benefits of others are not as clear. The challenge now is to resolve the difficulties experienced in defining the required services, their benefits, the issues for integration and interoperability, and providing effective strategic approaches to deal with these issues effectively.

Most people are aware of the colonial

legacy of three different rail gauges in Australia. This classic failure to collaborate seemed about to be repeated with incompatible smart ticketing systems for public transport in some of the states. Luckily the approach being taken by the Victorian Transport Ticketing Authority is intended to ensure a compatible approach from all system vendors, and provide a compatible solution nation-wide.

A similar risk of incompatibility of electronic toll tags was averted only by overwhelming pressure from state governments and their industry partners to ensure interoperability and compatibility of electronic toll tags.<sup>1</sup> Whilst tags now work along the



eastern seaboard, further interoperability challenges still exist in tolling in areas such as enforcement and payments reconciliation.<sup>2</sup>

The rail network has continuing challenges of train control radio systems which have been provided independently in each jurisdiction. These cases underline the nature of the standardisation and interoperability challenges in practical transport systems.

The active involvement of ICT professionals to deal with the technical solutions needed to make the systems and standards compatible and interoperable has been slow.



Truckies hit the road with new information

### In the supply chain

Much work is going on in the supply chain to streamline business processes and lower costs. This is proceeding alongside ITS development but a dialogue to identify benefits of collaboration in the complementary activity is only just starting. ITS and supply chain logistics and distribution are in two parallel worlds; they recognise each other's legitimate role but have not yet learned to work well together.

In many respects the focus is very different, as illustrated by these definitions of interoperability from the two domains:

- ITS interoperability: the ability of systems to provide services to and accept services from other systems and to use the services so exchanged to enable them to operate effectively together.<sup>3</sup>
- Supply chain interoperability: the ability for partners to coordinate information and processes, especially across an electronic network.<sup>4</sup>

The difference is that ITS is primarily about interoperability of information and control systems and services using message formats that in the past have been peculiar to the application; supply chain is about interoperability of business processes using traditional well-understood transactions. However there is now increasing realisation that the two domains must interoperate effectively and more common approaches found.

It may be significant that the supply chain has been intimately associated with the development of Web services technology, whereas ITS has not yet adopted it, pending confirmation of the security and reliability for ITS applications.

### So what are ITS?

Intelligent Transport Systems [ITS] are transport systems that apply information, communications and control technologies to improve the operation of transport networks.<sup>5</sup> It should be immediately apparent that this makes ITS a fundamental concern for ICT professionals.

Familiar examples of ITS include:

- Taxi dispatch and vehicle tracking using GPS
- Urban traffic management systems such as SCATS<sup>6</sup>
- Emergency vehicle pre-emption and public transport priority systems
- Traffic incident (accident) management systems for motorways and major arterial routes
- In-vehicle systems such as car navigation, especially when coordinated with traffic incident and congestion reporting systems
- Train control systems for optimum track safety and efficiency

Other systems generally included in the ITS domain include the following:

- Traveller information systems such as the 511 service in the US
- Freight container track and trace systems
- Car air-bag activation and roll-over crash distress call services

- Commercial vehicle compliance and fleet management systems
- Adaptive speed control for vehicles for motorway safety
- Collision avoidance detection systems for vehicles
- Use of smart cards for toll and other fee collection at highway speeds
- Head-up displays for better vehicle driver support

Then there are the futuristic ITS systems that will emerge over the next five to 10 years:

- Automated driving systems for instrumented highways
- In-vehicle support platform for multimedia information and entertainment services

A major challenge for this rapidly developing field is to try to avoid incompatibilities between ITS systems and services, and to enhance safety, security and efficiency of transportation systems without compromise to privacy of information or to the integrity of the systems involved.

Worldwide there has been much activity to define a top-level architecture for ITS in order to support interoperability and to provide a basis for evolution of systems and services. This effort has been instrumental in achieving some benefits already:

- In the US a common notation has been mandated for ITS architectures covering each of the states and regions. This National ITS Systems Architecture resulted from massive investment over several years and has provided a mature basis for national deployment.
- A common approach is in use through most of continental Europe for international systems integration. This has resulted from EU sponsored work primarily intended to harmonise differing national approaches.
- A holistic approach in Japan provides for effective coordination between national, regional and local government and private service providers. In some respects it is the most developed.

### What is the situation in Australia?

There are several institutes and centres of academic research and development for ITS in Australia and a major industry body, ITS Australia. ITS Australia is a not-for-profit





Point me in the right direction; route planning the fast way

industry organisation which draws together suppliers of ITS systems, researchers, government and users such as infrastructure operators and vehicle manufacturers.

It was incorporated in 1992, around the time that ITS was first being discussed, and has provided increasing levels of leadership for federal, state and territory governments, research and development and industry. In 1999 ITS Australia was charged with implementing the three-year national strategy for ITS program, e-Transport including the development of the National Reference Architecture for ITS (available to download from [www.its-australia.com.au](http://www.its-australia.com.au)).

The next stage of development is the development and publishing of the logical ITS architecture to provide an abstract view of the interconnectivity and interoperability of the many systems in use. One of the challenges of this work is to find and use tools which are able to describe and add meaning to the often complex relationships without overgeneralisation and ambiguity. Some contemporary approaches include the use of Unified Modelling Language (UML).

Although this has the potential to provide greater precision when dealing with abstract concepts, there needs to be available

other descriptions that can readily be used by people who prefer a less technical approach. Transport people are not accustomed to working with abstraction beyond the traditional concepts of services and routes.

The creation of new abstract concepts like itinerary or freight manifest is commonly interpreted in terms of existing artifacts rather than as concepts that can be specialised for individual applications. This is a crucial step because otherwise every system development will need to work through the same concepts.

Another critical approach for architecture development is the use of a data registry for collection and harmonisation of data concepts from projects for use in later projects. The Australian standards committee IT-023 for Transport Information & Control Systems has recently supported the publication of an Australian standard for an ITS central Data Registry. This re-badged ISO standard provides the basis for operation of the Australasian ITS Data Registry [ANZIDAR] that is nearing completion.

### How does ICT affect transport?

Changes in ICT affect transport just as much as any other sector, sometimes more so.

The ubiquity of wireless data communications is generating a profound impact on all forms of transport. For freight transport and distribution the use of RFID tags for freight items and AVL technologies for vehicles, along with geographic information systems to track and trace goods and to assist passenger travel, is giving rise to fundamental changes in how things are done and the level of service that is required.

This technology evolution takes many forms — contact-less smart card tickets for urban travellers, distress calls for stranded vehicles, delivery fleet dispatching, time-critical responses by emergency services or TXT message for airline check-in for flights. What is not so clear though is what effort is being put into optimising the interoperability of all of these technologies. This is where standards can assist greatly. So too an architecture that is conceptual enough to accommodate all of these various services in a generic form so that standards and semantics for the interfaces and applications can be reconciled.

### What needs to be done by ICT professionals?

ICT professional activity includes both the creation and exploitation of knowledge and practice related to all forms of ICT. With transportation becoming more and more dependent on ICT design and integration for the sustained delivery of benefits, it requires that its special needs are addressed by the peak bodies — AIIA, AEEMA, ATUG and ACS. The transport sector should be engaged by the ICT profession to resolve issues and add value.

This requires imagination and vision. For example, imagine the following scenario a few years hence:

1. Every vehicle has a built-in, sealed black-box immobiliser that prevents the vehicle from operating unless specified conditions are met:

- The vehicle has a valid RFID registration tag built into the rear number plate
- The driver has a contact-less personal card that includes a valid driver's licence object
- The immobiliser checks that the driver's licence object is on the list of drivers authorised by the owner of the vehicle
- If security is a concern then the driver



can be recognised by a biometrics check of iris using the driver monitoring cameras. These are used to monitor the driver for the onset of drowsiness and are a normal feature of vehicles like airbags are today

2. The personal device that everyone carries provides voice, data and multimedia networking using available wireless services. When in a vehicle this is expanded seamlessly to provide a greater range of services and resources that are carried or supplied by the vehicle. For example, interacting with traffic incident and congestion reporting services to guide the vehicle navigation, in public transport to make reservations and travel enquiries or to use Web-based service delivery using a shared broadband feed to the vehicle.

3. The availability of broadcast, multicast and addressed individual interaction with people or devices no matter where they are, in a seamless fashion, that deals with the connectivity issues as a part of the service.<sup>8</sup>

4. For transport traveller services it will only be necessary to input (probably by voice) a destination and approximate time of arrival for the personal device to research the options available using wireless internet-working, and offer them for selection. Then reservations will be made and confirmed, payments billed and settled and journeys undertaken all with an interoperable traveller information service delivered seamlessly to the personal device.

But how flexible will this integrated traveller environment need to be? We know that sometimes with in-vehicle navigation systems we choose to take a different turn. The friendly voice cheerfully adjusts and provides new directions without any hint of concern. It will be the same with the integrated traveller environment. You can always change your plans and the system will cheerfully adjust.

But it won't just happen by itself; it needs the management and leadership of ICT professionals to ensure it does work — safely, securely and efficiently — so we don't end up with the 21st century equivalent of multiple rail gauges.

This leadership has been evident in successful standardisation efforts such as electronic toll tags and in other emerging collaboration for compatibility, connectivity and interoperability. What is needed

now is to articulate generalised principles for achievement of interoperability in ITS. ICT professionals have addressed this kind of challenge in banking, funds transfer and airline reservations. Now this capability is needed in transportation.

## Conclusions

1. ITS is a growing area of ICT application that is critical to achievement of two high-priority national goals:

- The more effective use of existing, as well as new, transportation infrastructure through effective application of new technologies;<sup>9</sup>

- The efficient use of energy sources for transportation.

2. The design, development and delivery of ITS require the involvement of ICT professionals to work with transport policy and planning, ITS professionals and surface vehicle developers and operators.

3. Where ICT professionals can help most is in the conceptual design and development of information and communications systems to meet ITS requirements to the full extent of their potential.

So if you believe as I do that it is in transport that the most dramatic innovations in ICT are likely to occur, you will agree that its future requires our full attention.


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## Footnotes

<sup>1</sup> This outcome was achieved through ground-breaking work by the standards committee IT-023-05 to produce Australian standard AS 4962(Int)-2001 Electronic toll collection — Transaction specification for Australian interoperability on the DSRC link

<sup>2</sup> ITS Australia (National Electronic Toll Committee), Standards Australia (IT-023-05) and the 'MOU Group' of toll road operators are working collaboratively to achieve closure in the area.

<sup>3</sup> ISO TC204 document N271 quoted in McQueen, Bob & Judy McQueen. Intelligent Transport Systems Architectures. Artech House. 1999

<sup>4</sup> Australian Logistics Council. An eBusiness Interoperability Framework. DRAFT 23 Dec 2002

<sup>5</sup> ITS Handbook 2000. Recommendations from the World Road Association (PIARC). Artech House. 1999 p xvii

<sup>6</sup> Sydney Coordinated Adaptive Traffic System developed by the Roads and Traffic Authority of NSW and used in most major cities in Australia and some 80 cities worldwide

<sup>7</sup> AS ISO 14817 Transport information and control systems — Requirements for an ITS/TICS central Data Registry and ITS/TICS Data Dictionaries

<sup>8</sup> This will still provide for people making themselves unavailable for periods when they need rest or to avoid interruptions. Their e-mail will all be there when they want it.

<sup>9</sup> AusLink White Paper page 68





By Dennis Furini  
CEO, Australian Computer Society

# New Membership categories swell ranks

**IT'S BEEN** a busy couple of months for the ACS, with our National Conference in Melbourne, the start of our first TV advertising campaign, and a range of activities in the lead-up to the federal election.

I've spoken to several members who attended the National Conference and all agree that it was an outstanding event with a very high standard of speakers and content.

The line-up included several high-profile keynote speakers, including former ALP President and author Barry Jones, who drew on his experience in politics and elsewhere to provide an interesting perspective on ICT developments; Irish Web content guru Gerry McGovern, who also conducted workshops around the current Education Across the Nation series (and whose views are featured in a separate article in this issue); respected researcher Professor Michael Myers of Auckland University; and Microsoft security expert Ben English, who offered valuable insights into new technology directions.

For the first time, we also had a number of ICT suppliers exhibiting their products, which provided additional input and interest for delegates.

Associated events like the ACS Conference Dinner, which featured the presentation of the Victorian Pearcey Award, were also extremely successful, and it was wonderful to see our Young IT members and student members playing an active role there.

Planning is already under way for the 2005 ACS National Conference, which will be staged in conjunction with SEARCC 2005, the annual conference of the South East Asian Regional Computer Confederation, of which the ACS is a member society.

This combined event, which is expected to attract hundreds of delegates from across South East Asia, will occur on October 20-22, 2005 in Sydney, with the theme *Business Process Outsourcing and Emerging Technologies*.

The ACS last hosted the SEARCC Conference in 1998, when a large, international event was staged in Darwin. A national conference committee for SEARCC 2005 has been established under the leadership of ACS immediate past president Richard Hogg, and arrangements are well under way.

A formal call for papers will be issued early next year, and ACS members who are prominent in their fields are encouraged to consider submitting papers for consideration. The conference will also include streams focusing on pervasive computing, and computers in sport.

As I write this, our first television advertisements have gone to air on Channel 7, attracting a good response from potential

enjoyable evening with first-rate food, some very talented young entertainers and a festive atmosphere, along with the opportunity to bid on some wonderful auction items to help raise funds for the ACS Foundation.

This year's ball sets sail under the theme of the "Love Boat" and will again be hosted by industry identity Mark Hollands, who plays the role of Captain Merrill Stubing.

If you haven't yet organised your tickets, please call (02) 9299 3666 — you don't want to miss this one.

I know that most of you are well aware of the success we've been enjoying in the media of late, with the ACS achieving a 75 per cent share of voice amongst all the ICT associations and industry bodies.

## The ACS has also created new opportunities for professionals qualified in disciplines other than ICT

new members. The ads will also appear nationally on Sky TV and on Qantas in-flight entertainment.

They are designed both to raise awareness of ICT as a profession as well as encouraging ICT professionals to consider joining the ACS and raise their professional status.

The ACS has also created new opportunities for professionals qualified in disciplines other than ICT, but who have a professional involvement in ICT, to join the Society as Companion members.


This new membership grade is now open to ICT-focused professionals such as lawyers, accountants, teachers and others who would not previously have qualified for ACS membership. More information is available on the ACS Web site at [acs.org.au](http://acs.org.au)

The 2004 Smart Sparks Ball is being held at the Shangri-la Hotel in Sydney on Saturday, October 23. This is always a very

This furthers our cause not only in Canberra where we now have a much higher profile, but also in the other states and territories where our relationships with the various governments are closer than ever before.

Our President has recently held very productive meetings with the relevant ministers in Queensland, NSW and Victoria, as well as with both sides of the Federal Government.

Finally, another new initiative we're introducing for members is ACSLearn, an online resource offering brief definitions and explanations of a wide range of technical topics relevant to today's ICT professionals, with links to more in-depth information.

A prototype of ACSLearn is available at [acs.openlab.net.au](http://acs.openlab.net.au) and I encourage all of you to visit the site and provide feedback to assist us in tailoring this new service to best meet your needs. 



# Better information for better business

His three careers in IT in industry, as an academic and as an entrepreneur have shared a single goal: to manage information to optimise the business process

WHEN CYRIL BROOKES became the founding professor of information systems at the University of NSW in 1974, he brought a new covenant to the faculty's philosophy: information technology students would learn how to create new ways to optimise business, not just to develop new technology.

for iron and steel production on emerging micro-processing technologies at BHP's research laboratories in Newcastle brought the then recently-qualified Dr Brookes into a communion with commercial imperatives that would underpin his working life.

"We did a lot of very good work mainly in the area of production control and planning, merging information technology into production processing using what used to be

computer-based production systems, the work spawned an abiding professional focus on the management and application of formal and tacit data which would later result in his establishing grapeVINE and BI Pathfinder as highly successful commercial enterprises.

By the time he'd taken charge of BHP's entire IT empire in 1971 at its Melbourne head office with a staff of more than 1000



**"Basically, my interest has always been in trying to raise the efficiency of management professionals, to make them more effective, through the information systems supporting them"**

"We were oriented towards business aspects and applications whereas other IT faculties were more oriented towards computer science for its own sake," he says.

This mind-set had evolved in a decade with BHP after gaining a BE (Electrical Engineering) with first class honours at Sydney University in 1962, later a Masters and then a PhD from Oxford for his thesis on "Adaptive Control Systems" in 1964.

Pioneering work in developing production planning and process control systems

called industrial engineering research, and at the same time building databases of commercial applications and then merging the two together so that the production-oriented stuff used the same data and shared the same systems."

A move to the Big Australian's Port Kembla steelworks as its data processing manager in 1968 saw him as BHP's first executive to combine the management responsibilities of commercial data processing, management science applications and process automation.

Directly involved as well in the design of some of the world's most advanced

and six satellite computer installations, he'd reached the top of Australia's private sector information management tree.

"They were heady days with the IT manager as something of a high priest — nothing happened without their saying 'go for it' but that's all changed now that everyone's an expert."

Stepping into an academic post brought little financial hardship: "Academic salaries were at about the same level as the high end of the commercial sector — it's changed a lot since."

The UNSW IT faculty grew to be one of the largest in Australia with 30 academics



and 1000 students during his tenure, and has kept growing.

His practical experience and professional determination to reinforce technological convergence with business and government, particularly in information management, supported the university's drive into cooperative schemes with industry under which students would spend a year gaining workplace experience.

"I believe we were one of the first to introduce the concept, and it still operates successfully at UNSW. Others have since adopted similar practices. It's essential in developing real-world skills."

His tenure lasted 20 years, and also included being head of UNSW's School of Accountancy from 1979 to 1985, strengthening the integration of business and IT practice.

"There were interesting things happening in finance, manufacturing and mining at the time. We had the same activities as much larger economies, but the density of any given activity was much smaller.

"Whereas the US might have 500 large banks for example, we had five, and this made Australia a very good test market for systems and exploring ways of making IT more efficient."

He knew that some of the research work he had been doing at BHP and UNSW could be productised and "I started off trying to build software products for the world and sell them, with some success.

"Basically, my interest has always been in trying to raise the efficiency of management professionals, to make them more effective, through the information systems supporting them.

"There has been quite a lot of research in this area, but I believe that much of it has been wasted or misdirected in that the key thing is to merge the hard information (the numeric information) that's in computer databases with the unstructured, or tacit, information they carry around in their heads.

"What people know is generally unknown outside that person, and personal knowledge is valuable. Very little of it exists on computers.

"You get this strange thing in companies where different people try to solve the same problems several times over. All this is to do

with knowledge sharing, an over-hyped area now, but not much was being done about it in the late 80s."

Out of this came grapeVINE, a joint venture with Unisearch (the commercial face of the UNSW), which was designed to help companies collect their unstructured information, build on it, store and disseminate it to create knowledge.

The technology, which automatically classifies documents, targets delivery of alerts to the appropriate people and manages the assessment of business decisions, won him a US patent.

"It worked pretty well I think, although the product was slow to get started because the technology base on which we were building it kept changing — from DOS to OS/2 to Unix to Lotus Notes to the Internet — and we had to keep rebuilding the software."

The grapeVINE technology was sold to Sun Microsystems at the end of 2000. It has become an integral part of Sun's corporate Intranet server business software environment.

His work in information and knowledge management continues with a new project, EIS Pathfinder, in the related area of requirements determination for reporting systems in a Web environment.

"ERP, CRM and financial systems have created huge amounts of data and there's been a lot of work on business reporting or BI software. This creates a conundrum: we have more data than ever before, it's more accurate, we have increasingly effective and inexpensive software tools to mine and process it.

"And with all these you'd expect business reporting systems to be very effective and satisfying. But research shows that only half the systems are working the way they should and this hasn't improved with all the technology. Why?

"I believe the answer is that with all the tools in the world we are not building the wrong systems efficiently. Peter Drucker said: 'Efficiency is doing things right, but effectiveness is doing the right things.' I think we're being very efficient in the way we provide access to information but we're not effective because people don't get what they want.

"So requirements determination remains

a big problem. Our methodology provides much needed structure to that process.

"On one hand there is a management culture and on the other an IT culture, and the two don't interact very often; except when the IT side goes to find out what the management culture wants. The answers come back inadequately — management is unable to explain what they want and the analysts are unable to elicit what's required. It's not that either group is incompetent, it's because they don't understand each other's ways of thinking and working.

"Management just wants to know what is going on in the business and if there's a problem — they don't have time to delve through endless reports seeking satisfaction."

## Encouraging professionalism

Amid a hectic commercial history and a series of government advisory appointments, he has worked to promote professionalism in ICT including being NSW chair of the ACS, an executive committee member for several years and serving on IFIP's information systems committee for a decade from 1975.


He was made an ACS Fellow in 1972.

He was founding director and later chair of the Australian Association of Chief Information Officers.

"I feel that the current crop of CIOs are missing out on the good things in IT life. The IT business world is so serious, ephemeral and so isolated. I have tried to find a way to get a group of 200 or so CIOs together to build a CIO network.

"It's hard to get them to respond as they're so busy; mining doesn't meet with manufacturing, or retail or financial — and government CIOs don't meet their commercial counterparts. All have the same problems; almost every issue in IT is horizontal, going across all industries — there are few vertical issues.

"If you've got a technical problem another CIO will have solved it or at least had a go. It's the same in setting and enforcing corporate policies, or getting unbiased information about the merits of products. Analysts are far less independent and most consultants have their biases.

"However, as yet I haven't been very successful in getting that all together. It's a work in progress." 



# Standards need more rigour

Many software and systems engineering standards are now becoming so complex and so interdependent that simple methods of standards development are no longer adequate to ensure the necessary degree of consistency and rigour

By Tom McBride

**ADDITIONALLY CHANGING** a standard can incur significant costs to the user which puts pressure on the developers to get it right in the first place, but also to seriously consider the consequences of changes. Like software, the quality level needs to improve. But also like software, this won't happen using the same development methods and, instead, requires different methods. In other fields, like software development, methods of achieving the

long documents or between documents and, although circulation is wide, very few people are knowledgeable enough or take the time to do more than a cursory review. Two hundred pages of standard is a daunting thing to read and hardly bedtime entertainment. At its best peer review is an excellent flexible system of checking the quality of a standard but at its worst it does not ensure the quality levels expected and required of current-day standards. But it is the most common system of review when the subject matter is diverse and involves concepts rather than numbers.

Japanese companies, American companies and European companies. Some years ago, when some seemingly small changes were being proposed to ISO 12207, the Japanese delegation quietly expressed some concern. It seems that Japan had adopted ISO 12207 nationally and any changes to it would incur significant costs to Japan as a whole. Similarly when the Software Engineering Institute wanted to publish the Integrated Capability Maturity Model (CMMI) and withdraw its predecessor, CMM, a large number of organisations simply refused to



**We are all very familiar with clinical trials and expect that many consumer goods will be thoroughly tested before becoming available to consumers**

same quality objectives have included field trials and more rigorous methods of expression and checking. Like software, higher quality levels are seldom achieved by pressuring those who are already doing the best they can under the circumstances. It requires different methods.

Standards are currently developed by writing narrative English, then sending it out to a wide range of people for critical review. The problems with this are that it is difficult to achieve consistency across

Some standards have great commercial significance. ISO 12207, ISO 15504, CMMI and ISO 14143 are examples of standards with a reasonable sized user base. Any changes to those standards, no matter how well justified and no matter how much better it makes the standard, still incurs upgrade costs. In Australia we tend not to think too much about the costs of changing a software development methodology because it doesn't seem to be that much of a bother to read what the new methodology says and follow it from now on. But Australia has less appreciation of large scale than do

convert to the new model. Having spent significant money on getting the development processes required by CMM installed and everyone trained in their use, they weren't about to happily spend the same amount all over again. So CMM has been maintained for an interim period.

During its development there has been considerable difficulty gaining consensus on ISO 14143 — Functional Size Measurement. One of the reasons, but not the only one, is because the existing base of some 80,000 organizations already use the IFPUG method to measure the functional size of their




systems. Any change to the method raises problems with the validity of the existing database of measurements. What happens to all that data? What happens to the investment in the training in IFPUG alone, never mind anything that actually uses the measured size to, for example, estimate the size of a project? What of contracts drawn up based on IFPUG measures? Are they still valid? And, of course, we know about the costs of upgrading the entire QA system every time ISO 9001 is revised, which is about every five years.

specifications and looked at the final product and they think it will all be OK. Yet this is what we do with standards. There is seldom a trial to see if the standard does achieve what it sets out to do, like describe activities that will actually result in a good specification or good design. There is seldom a trial to see if the intended consumers can understand the thing. Nothing to check how easy or costly it is to implement. Nothing to check how it affects or interacts with other activities the consumer might be involved in.

One of the software engineering stand-

standard when work on the standard doesn't count toward any research quantum.

It is unreasonable to expect the standards developers to be aware of everything. The people who develop standards are all very able people who volunteer their time to a good cause. Their only payment is the same bragging rights that go along with any other volunteer work. But there aren't that many of them and they all have limits on how much time and energy they can devote to the task.

Perhaps there are some who are domain experts and could afford the time to review a standard and send in some observations and suggestions for improvement. And perhaps some companies really could use the standard, assuming it was well founded and actually helpful. Perhaps they need it enough that they would be prepared to trial it so long as they got some help and so long as it didn't cost them real cash. That would be a start. 

*Tom McBride is chairman, ACS National Standards Committee*

**"Few companies are likely to say: "Here, take a few hours away from this project, on which the future of the company hangs, and tell me whether you think this draft standard makes sense"**

Change is inevitable, we know and acknowledge. But it would be nice if the standards were well developed and rigorous in the first place so that the passing of time brings on necessary changes rather than bug fixes. It is annoying to be faced with changes to standards, and the cost of conforming to those changes, when the standard wasn't as well thought out as it should have been.

When consistency matters, as it does in the process standards of ISO 12207, ISO 15288 and ISO 15504 rather than writing the standard as a text document they could be written as a database. Databases are good tools with which to ensure consistency. This was done as an experiment on one standard recently with significant effect on the level of consistency we were able to achieve. Unfortunately the idea of using a database proved to be a little too radical for some and it wasn't carried through although the resulting consistent clauses were. As it happens when we looked into it, a database is an acceptable way to express a standard. Maybe next time.

Review by domain experts will catch many flaws of clarity, ambiguity and consistency but won't be able to check usability. That would require a trial.

We are all very familiar with clinical trials and expect that many consumer goods will be thoroughly tested before becoming available to consumers. We wouldn't accept the view that knowledgeable people have reviewed the

ards was trialled as part of its development. ISO 15504, Software Process Improvement and Capability Determination, was published first as a technical report so that there was a two-year period, instead of the normal five-year period, in which it could be trialled throughout the world and the experience of those trials fed into the subsequent revision.

Full clinical trials are expensive and standards don't need to achieve the same level of proof that they will do no harm. Instead it would be better to begin with the objective of proving minimal levels of usability. Rather than pitching standards development and trials as requiring the best available talent, perhaps it would be better to look at what would be "good enough" to achieve a minimal level of usability and to begin the expectation that standards should be trialled. We first need to establish a general method of conducting standards trials.

But this is not a very charitable time. Few companies are likely to generously say to one of their most valuable people, for domain experts tend to be valuable, "Here, take a few hours away from this project, on which the future of the company hangs, and tell me whether you think this draft standard makes sense." There is no money in it for them, and precious little publicity. Nor is the academic community likely to spend their precious time developing a research program to trial a

## The symbol of quality

AS PART of our ongoing effort to raise the status of ACS membership, the society is inviting existing full



Members and Fellows to include the ACS logo on business cards. This is in addition to using ACS post-nominals such as MACS or FACS.

Not only would this clearly identify you as a qualified IT professional who subscribes to a recognised Code of Ethics and Code of Professional Conduct and Practice, but it encourages other like-minded practitioners to consider raising their own professional status by joining the society. The ACS has developed a style guide for the use of its logo on Members' business cards and it is important that this is adhered to at all times. Visit <http://www.acs.org.au/national/guidelines/bizcard/.html> for information.

For more information, contact Simon Kwan on (02) 9299 3666.



# 'Does the ACS have a future?'

How the ACS can show Australian IT matters'

*More than 50 NSW Fellows attended their annual dinner in Sydney recently to renew old amities and hear political, industrial and social luminary Barry Jones speak about ICT, and the ACS's, place in Australia. These are edited highlights.*

**Abstract:** The Australian Computer Society, as the professional body for practitioners in the ICT industry, faithfully represents the Australian scene in which employment is large, diversified, technically skilled, but oddly non-strategic. ACS is rightly committed to assisting its members to achieve their professional goals, to raise and maintain standards and ethics in ICT, and to promote the beneficial use of technology.

But the ICT industry in Australia, although all pervasive, is both passive and derivative, with relatively few brand names of international significance, a significant contribution to Australia's adverse terms of trade, and potentially weaker after the Free Trade Agreement with the United States becomes operative.

The ACS could be an effective lobbying group, not just to ensure more effective ICT governance, and transparency and accountability in ICT decision making, worthy but secondary aims. If it chose, ACS could raise its sights towards primary aims, to help create an ICT industry which had international recognition. But to do this, Australia would need an ICT industry which had more in common with medical research than with, say, the motor vehicle industry, aviation, accountancy or telecommunications, with unique Australian content and a high level of Australian ownership and control.

It would need champions, too, of the quality of Gus Nossal, Frank Fenner, Peter Doherty, Graeme Clarke and Alan Trounson, who have helped keep medical research — and breakthroughs — on the



Barry Jones

national agenda. The bionic ear is an excellent illustration of combining electronic and biological research.

When attempts have been made to generate national debate on ICT issues, such as the ill-fated Knowledge Nation Task Force Report in 2001, ACS has contributed the sound of one hand clapping. I assume that ACS was involved in the FTA debate, but your Web site does not make that clear.

ACS has some attributes associated with a trade union or professional association, but your mission aspires to a role in standards setting, promoting research and extending knowledge. I wish more power to you in promoting these aims, and if I was more familiar with your achievements

in these areas I could be even more enthusiastic.

NICTA is potentially a major player in Australia's intellectual life and as it flourishes so will ACS.

Occasionally our ICT capacity has a major breakthrough, such as Radiata, but then — if it is sold off, as it was to Cisco in the US, ICT slips back to a mere servicing role.

The Inventory Problem — leaders or followers? Australia suffers from the "inventory problem" — a conspicuous lack of high value-added brand name goods and services for which there is international recognition and demand. This is a by-product of Australia's long reliance on resources, and the slow transition from the "Old Economy" to the "New Economy" (the central point of Donald Horne's *The Lucky Country* (1964)).

Australia had its own Industrial Revolution in the 1880s — but, like Canada, it adopted the colonial (or "cargo cult") model of technology acquisition. Sweden, Switzerland, the Netherlands, Denmark and

Finland adopted a national model. In 1901, when the Commonwealth of Australia was inaugurated, we had four great areas of scientific strength: agriculture, geology/mining/metallurgy, astronomy and medicine. A century later, in 2001, we had the same four great strengths.

Oddly, after a century of scientific revolution, nothing new had been added to the list and nothing had dropped off. (The new discipline of biotechnology operates within agriculture, mining and medicine). Like Canada, Australia illustrates "truncated development", in which innovation is seen essentially as marginal improvement in processes for materials in very long product cycles, not new products with a short life (e.g. computers/software).

Foreign ownership of major sectors of the Australian economy, e.g. motor



manufacturing, aviation, chemicals, helps to perpetuate a "follower" economy. There is a long-standing confusion between innovation and improvisation.

In the early 1980s, in comparing, say, Australia and Taiwan, it would have been a reasonable hypothesis to assume that by the year 2000 Australia would have been well ahead in ICT production, given our strong education systems, research history, inventiveness and being plugged into the English-speaking world. In fact, Taiwan streaked far ahead. We suffered from a failure of nerve, conventional thinking in the public service, absence of dynamic and compelling leadership in the computing business. Our medical research benefited from outstanding advocates. Nossals were elusive in computing.

Early in the Hawke Government, Cabinet made a deplorable (but understandable) decision which shaped and limited Australia's capacity to develop ICT: The Department of Social Security needed to upgrade its computer capacity, which included the processing of millions of cheques each fortnight.

The department called for tender submissions for a \$200m computer system — a huge sum in 1983. A Cabinet sub-committee, to which I was co-opted, had to choose between two submissions, one from Wang from the United States, the other from a consortium of Australian companies.

I argued passionately that we should adopt a high-risk strategy which would force Australian hardware and software practitioners to collaborate.

Bureaucrats from Treasury, Finance and Social Security urged a low-risk strategy: give the contract to a large and expanding US company which could guarantee high-level performance and would be there forever. Cabinet adopted the Wang option, and the Australians lost their chance. Ministers said: "Wang won't fail — but the Australians might. And if there was inadequate local backup, the system crashed and pension cheques did not get out in time, we would face a political disaster. Let's play safe."

A few years later, Wang stalled and lost most of its market share. Australia remained a huge importer of ICT, with very modest exports, mostly in software.

**Capital formulation problem.** This seems to be intractable.

**Political problem.** No Australian Government ever adopted a National Information Policy — and saw all the issues of information and IT as segmented so that education, industry, telecommunications, entertainment were all seen in isolation. No political champions were prepared to talk the issue up after my demise as Minister in 1990. Queensland was an exception, at the time that Kevin Rudd was Chief of Staff to Premier Wayne Goss.

**The Australian ICT industry is essentially a subset of marketing and packaging:** the ICT supplements published by newspapers are promotional, pushing product and instructing about processes rather than developing ideas, generating consequential downstream service employment rather than start-up ventures. (Our ICT profile is more analogous to the motor industry than, say, to medical research).

**Low profile:** in striking contrast to Australia's medical research which has had high prestige spokesman such as Nossal, Fenner, Doherty, the ICT industry has languished...

**Economic problem:** foreign ownership. Likely to be compounded by the FTA.



The South East Asian Regional Computing Confederation (SEARCC) to mark the 25th anniversary of the confederation's founding in Singapore has recognised "the vision and foresight" of John Bennett, as a Trustee of IFIP, in recognising the potential of SE Asia in global IT. He was presented with a commemorative certificate at the NSW Fellows dinner by Immediate Past President Richard Hogg, the ACS's representative on SEARCC.

## ACS introduces new membership grades

**THE ACS** has introduced two new membership categories: Senior Member, to differentiate more experienced ICT professionals; and Companion, which for the first time recognises professionals from other fields working in senior ICT roles.

The new grades allow senior managers and experienced consultants working in ICT to demonstrate their professionalism and commitment to a Code of Ethics.

The Senior Member grade is open to qualified senior ICT managers, experienced consultants and CIOs with at least 10 years' professional experience, including five years at a senior level, and appropriate qualifications and knowledge.

The Companion grade has been established for senior managers and members of other professions who might not hold ICT qualifications, but who have a significant involvement in ICT. Eligibility is based on academic qualifications, experience and eminence or authority in a particular discipline, such as teaching, finance or accounting, law, nursing etc.

ACS President Edward Mandla said the new membership grades are designed to recognise those seasoned professionals who have developed an enhanced body of ICT knowledge.

"We wanted to recognise the experience and contributions of ICT professionals who have already achieved many of their professional goals and currently hold senior roles in management, consulting or other disciplines within ICT," he said.



We have major players, e.g. Murdoch and Packer, but they have shown no interest in developing the local ICT capacity.

**Time problem:** is IT used to expand time, to make us more creative and do amazing things, or is it a means of consuming time, a form of distraction, a major activity substitute.

**Psychological problem:** expanding time, or filling it in. Web surfing, text messages, mobile telephones — frantic desire to fill in time. Not much evidence that it adds to creativity.

**Correlation between quality of information input and the quality of ICT delivery.** Is the relationship negative? Compare the quality of Abraham Lincoln's Cooper Union (New York) speech in February 1860, a deeply researched, complex, finely nuanced argument which was disseminated through primitive technology, and debates in the 2004 US Presidential election, where the electronic delivery is sophisticated, but the quality of argument/assertion is not.

**Privatisation of research and its limitation.** This leads to governments treating CSIRO and the universities as trading corporations, and moving tertiary education towards an increasing emphasis on training and commercial goals. Australia cannot pursue the goal of an innovation culture ("Smart Australia") and simultaneously cut R&D expenditure. Basic research is under major threat. Universities have become increasingly instrumental, less speculative — imposing self limitation on the nation. Their infrastructure is often crumbling. Humanities are down, computer and business studies up. (Monash University indicates that 9 per cent of its activity is in the Humanities — 30 per cent in computer studies, IT, Management, Marketing, Accounting). Science vocations well down — up to 20 per cent on a decade ago. (Shortfall is taken up by overseas students. At graduation ceremonies these days, who receives the serious degrees and who gets the Mickey Mouse awards?).

We have huge policy deficits — no science and technology policy (or Health, or Education) — only Budgetary strategies. Queensland is an anomaly, experiencing a remarkable growth in medical

## Don't miss the Smart Sparks Ball

**TIME IS RUNNING OUT** to book your seats for the 2004 Smart Sparks Ball, the premier fund-raising event for the ACS Foundation, which will be held at the Shangri-La Hotel in Sydney on Saturday, October 23.

This is a wonderful opportunity to enjoy a fabulous night's entertainment while investing in the future of the ICT industry by helping to support young people through the ACS Foundation.

This year's event takes as its theme the "Love Boat", drawing on the popular television series from the 1980s to navigate a course through an evening of fine food and wine, colourful performances by a troupe of talented young performers from *Out there Productions*, and a wide range of interesting auction items, including two Lexus cars with low reserves!

Come dressed as you would for a glamorous shipboard cruise and prepared to be welcomed on board by none other than the Love Boat's Captain Merrill Stubing, aka industry researcher and commentator Mark Hollands, who served so effectively as MC at last year's event.

At the ball, you'll have the opportunity to participate in both silent and live auctions for products ranging from paintings and wine through to electronic gadgets and sporting memorabilia. Sydney City Lexus is providing two cars — an \$80,000 Lexus RX330 and a \$15,000 Toyota Echo — for auction on the night.


The ACS Foundation is grateful for the sponsorship of Altiris, eCorner, the ACS and Alt-U, which once again has provided administrative support for the organisation of this year's event.

Tickets to the Smart Sparks Ball are \$225 each or \$2400 for a table of 12. For more information or to make a booking, call (02) 9299 3666 or e-mail [smartsparksball@acs.org.au](mailto:smartsparksball@acs.org.au)

and biotech research, assisted by a number of enterprising Cooperative Research Centres (CRCs).

Two Centres of Excellence were created, following the Government's Backing Australia's Ability Report (January 2001) — one in ICT, the other in biotechnology.

NICTA (National ICT Australia) was established in October 2002, as a Centre of Excellence with ANU and UNSW as the core partners. \$129.5 million was allocated out of the "Backing Australia's Ability" Fund. Microsoft is a partner and Melbourne University joined in July 2004.

I did not come here to discuss the 2004 Election campaign, but there is a distinction between the Coalition view (leaving aside NICTA) and the Opposition on the future development of ICT. The Coalition promotes usage and consumption of ICT as a driver for productivity growth *per se*, with less concern about where the hardware/software/intellectual property originates. The Opposition wants to put more emphasis on creative ICT and developing new products. 

### The symbol of quality

AS PART of our ongoing effort to raise the status of ACS membership, the society is inviting existing full



Members and Fellows to include the ACS logo on business cards. This is in addition to using ACS post-nominals such as MACS or FACS.

Not only would this clearly identify you as a qualified IT professional who subscribes to a recognised Code of Ethics and Code of Professional Conduct and Practice, but it encourages other like-minded practitioners to consider raising their own professional status by joining the society. The ACS has developed a style guide for the use of its logo on Members' business cards and it is important that this is adhered to at all times. Visit <http://www.acs.org.au/national/guidelines/bizcard.html> for information.

For more information, contact Simon Kwan on (02) 9299 3666.



# ACS certification graduate wins PMI award

**CONGRATULATIONS** to Rohan David (CMACS — IT Strategy and Management) who won the Project Manager of the Year 2004 Award from the Project Management Institute (PMI) Council.

This prestigious award was open to any project manager working in Australia who completed (or practically completed) a project in the 12 months leading up to June 1, 2004.

Finalists were flown to Melbourne for the final selection interviews and the award was presented during the PMOZ Project Management Conference in Melbourne on August 13. Rohan's trip was sponsored by the ACS, providing him with travel, accommodation expenses and registration to the PMOZ conference. He also received travel, accommodation expenses and registration to a PMI Global congress valued at \$10,000.

An ACS member for more than 14 years, he has been working with global multinational organisations across broad product portfolios. He implemented CRM mobile (field) sales for the Cadbury Schweppes sales force and was responsible for the due diligence/IT integration of a newly acquired company into the Cadbury (Confectionery) landscape. His initiatives have involved large cross-disciplined teams where he has played many roles from business consulting to project management.

Rohan completed the CMACS program

## Successful conference

**MORE THAN 160** delegates registered for this year's ACS Conference which saw 50 presentations and four keynote addresses.

The event, which had 14 supplier/vendor exhibitors demonstrating their products and services for the first time, was organised by ACS member Chris Montegale.

"Chris created and managed an excellent event," said CEO Dennis Furini.

The conference drew a significant number of new ACS memberships. It will be held in Sydney next year in conjunction with SEARCC.



Pam Barnes (Certification Program Co-ordinator), Gerry McGovern, Wayne Knack (PD Board Director), Gerald Murphy (Certification Program Manager) and Kate Behan (ACS Fellow and consultant to the Certification Program)

in IT strategy and management in 1997 and said the course was an important stepping stone in his career.

"Because the CMACS program content is compiled by industry experts, it gave me up-to-date knowledge on trends, legal issues and strategic insights that complemented my work, enabling me to leverage significant value from it. The program had a good choice of subjects to pursue in addition to the core subjects of IT Trends and Business, Legal and Ethical Issues," he said.

"The alignment of process, people and technology to a business strategy is a fine art requiring teamwork, communication, focus, planning and tenacity. IT professionals should stay abreast of changes and trends in the entire portfolio of knowledgeable insights, process frameworks and technology options that can help them to consistently deliver on the promise — CMACS provides this knowledge."

## CMACS project management

Project management (PM) is a creative problem-solving process that deter-

mines a project's failure or success. Poor project management has been a contributing factor to the "credibility" problem of many IS/IT organisations and functional areas. Our PM specialist subjects cover:

- Lessons learned from success and failures
- Project management frameworks
- Project context
- Integration and initiation processes
- Project planning
- Project scope
- Time management
- Benefit and cost management
- Human resource management
- Risk management
- Quality management
- Communications management
- IS/IT projects
- Managing e-projects
- IS/IT development methods
- Advanced project techniques
- Managing contemporary IS/IT projects such as ERP, CRM, DW, BI and KM. 



# Inaugural bootcamp a big success

**THE ACS** is considering a proposal to make the YIT Bootcamp an annual event with additional state-based workshops, following the extraordinary success of the inaugural seminar in Sydney.

A total of 59 delegates attended the Sydney pilot in July, with feedback ranging from "highly informative, very useful and just as importantly, highly enjoyable" to "a brilliant opportunity to meet with other aspiring professionals, gain important contacts, and learn what it takes to begin a career in IT from inspiring presenters".

The three-day event, from July 11-13, covered preparing delegates for the workforce, resume preparation, interview skills, career planning, and provided

insight into the industry, the realities of the workforce and graduate experiences.

Bootcamp was heavily subsidised by the ACS and based at YHA Sydney Central to help keep costs down while providing comfortable and relaxed surroundings for delegates.


YIT Committee Chair Ana Govan said the event was "absolutely spectacular" with "an amazing environment and energy that was incredibly uplifting".

Delegates heard presentations from IDC's Peter Hind on where the ICT industry is heading; Career One's Kate Southam on identifying the right job; Edwina Low of Alt-U on presentation and interview skills; Bhuvan Unhelker of MethodScience on

career planning; and Prof Kerry Phelps on setting and achieving goals, among others.

"The feedback we've received and continue to receive from delegates has been incredibly positive. Many of them have gone back home and formed local YIT groups to maintain the relationships they made at the event," said Ana.

"A number of delegates have expressed a wish to become more heavily involved in the ACS as a result of their bootcamp experience and some have managed to win new jobs as a result of the skills and confidence they gained."

A decision will be made about staging additional bootcamps and local workshop events by the November meeting of the ACS Council. 

## ACS Eureka Award for Optical Fibre Technology Centre

**THE OPTICAL FIBRE TECHNOLOGY CENTRE** (OFTC) at the University of Sydney has won the prestigious Australian Computer Society (ACS) Eureka Prize for ICT Innovation for its breakthrough work in developing plastic optical fibres.

The revolutionary technology has enormous commercial potential to reduce the cost of "last mile" and local links for broadband networks, as well as diverse possibilities for medical, biotech, endoscopy, imaging and robotics applications.

The Eureka Awards, Australia's premier awards for Science and Innovation, were presented in August at a gala dinner attended by over 1000 people representing the cream of the nation's scientific community. Also

present were NSW Governor Professor Marie Bashir, Federal Science Minister Peter McGauran and NSW Environment Minister Bob Debus.

ACS National President Edward Mandla presented the ACS Eureka Award for ICT Innovation to the OFTC team, congratulating them on their quality research and the outstanding potential of the technology.


"The ACS is proud to sponsor the only ICT-related award among the 22 Eureka prizes. We are particularly delighted to award an Australian research effort which has resulted in a product with such strong commercial drivers and which offers enormous potential benefits both for Australia and for international markets," he said.

A senior researcher on the OFTC team, Maryanne Large, said the polymer optical fibres developed through their research had the potential to dramatically reduce the cost of delivering broadband Internet access to homes and businesses.

"We're seeing lots of interest in this technology, both from Australia and overseas, and are currently negotiating with a major international player in relation to the potential broadband applications," she said.

It was third time lucky for the OFTC team, which entered the Eureka awards in 2002 and 2003.

"We've been very focused on trying to be competitive enough to win this award and are delighted with this result. There aren't a lot of opportunities for scientific achievements to be publicly recognised in Australia and the Eureka Awards are a great forum to showcase new developments and create more awareness," said Ms Large.

"Our technology will change lives just as mobile phones, Internet access and broadband have in the past 10 years. We can't predict what the change will be, but within the next decade I expect to see these high-capacity cables in homes, businesses, cars and in a new generation of powerful computers." 

## ACS Annual General Meeting

**MEMBERS** are invited to attend the 13th Annual General Meeting of the ACS, which will be held at 6.00pm on Friday, November 19, 2004 in the Press Room at the Radisson Plaza Hotel, 27 O'Connell St, Sydney.

The business of the meeting is to confirm the Minutes of the November 2003 AGM and the Minutes of the July 2004 GM; and to receive and consider the Annual Report for 2003/4 (which incorporates the Statement of Accounts and Balance Sheets, and the Auditor's Report).

Minutes of the 2003 AGM and the July 2004 GM will be attached to the meeting notice on the ACS Web site, as will the 2003/4 Annual Report, once it is completed.



# INFORMATION AGE

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and Doug Jeans

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**National Sales Manager:** Alyssa Doherty

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**AUSTRALIAN  
COMPUTER  
SOCIETY**

**CEO:** Dennis Furini

**President:** Edward Mandla

**Immediate Past President:** Richard Hogg

**Vice-presidents:** Philip Argy, Chris Avram

**National Treasurer:** Glen Heinrich

**Publications Board Director:** Tom Worthington

**Contributing editor for ACS:** Caroline New

**Audited circulation 15,230**

## Recently graded members of the ACS



**AUSTRALIAN  
COMPUTER  
SOCIETY**

### Canberra Branch Member

Brittill, Neil  
Dias, Virajamani  
Lee, Hae  
McConnell, Ross

### Associate

Bhati (Brettell), Rina  
Brogan, Daniel  
Saul, Brooke  
Turner, Tristan  
Wettle, Benay

### Provisional Associate

Arogundade, Oia

### Student

Robinson, Miranda

### New South Wales Branch

#### Member

Abela, Simon  
Acquah, Isaac  
Baker, Shane  
Barbariol, Robert  
Bradbury, Neville  
Castle, Craig  
Eskander, Magdy  
Forrest, Wayne  
Gorton, Ian  
Gow, Richard  
Hopcroft, Grant  
Iliescu, Vergil  
Kumar, Amrith  
Mainuddin, Asheque  
McCormac, Colin  
Nguyen, Chuc  
Quayle, Cateen  
R Kulkarni, Milind  
Sheldrick, Rob  
Simonovski, Nick  
Thompson, Leigh  
Walder, Chris  
Wong, Barry  
Wong, Chris  
Zarella, Egidio

#### Associate

Adriano, Aris

Ahmed, Mohammed

Boje, Chris

Butani, Manisha

Cannon Brookes, Michael

Chadha, Urvasi

Cheung, Rico

Cho, Joe

Chun Kuen, Billy

Coetsee, Bryan

Cui, Hao

Davis, Bruce

Farquhar, Scott

Gleeson, Nicholas

Iqbal, Muhammad

Johnston, Samuel

Kasem, Muham

Kashoji, Venugopal

Lauw, San

Lazaro, Onita

Loo, Toby

Lowbridge, Michael

Noordin, Chairusanah

Ogata, George

O'Mahony, Aine

Park, Young

Pundir, Ashwani

Quarters, Conqueror

Ramli, Mohamad

Rashid, Syed

Santos, Denny

Seo, Jongmin

Simons, Robert

Sledziona, Luke

Sultana, Nargish

Vrazalic, Lejla

Ward, James

Wydan, Anh

Yuwono, Welly

Provisional Associate

Basri, Zenobia

Gill, Sandeep

Leslie, Chris

Tran, Quoc

Student

Abbas, Nasir

Audh, Sherwin

Chau, Agnes

Dogra, Rajeev

Fong, Wai

Korjenic, Semir

Leung, Karen

Oh, Yun

Raza, Imran

Sader, Imad

Tan, Nicholas

Tongjai, Tawan

Tran, Van

Tse, Ken

Wu, Hui

Yang, Ling

Zeman, Tomasz

### Northern Territory Branch

#### Associate

Mading, Jok

Overseas Group Branch

#### Member

Abu Kashaf, Mousa

Caillavet, Naguy

Chandra Bose, Duethy

Chew, Phok

Chia, Ching

Coll, Jim

Crawley, James

Fernando, Sattambige

Glazirin, Alexey

Hannigan, Daniel

Heng, Ee

Kiely, David

Kotzya, Brestislav

Lee, Yoke

Mills, Ryan

Nam, Patrick

Oo, Zeya

Palpan Yacolca, Marisol

Prieto Daza, Guillermo

Pugh, Peter

Srinivasan, Subramani

Vaghjiani, Vinod

Wong, Pang

#### Associate

Aljamal, Samer

Amaran, Sethulingam

Arellano, Victoria

Chumbley, Lester

D'Souza, Lavina

FitzPatrick, Keith

Hadunduwa Arachchige Don,

Saman

Hu, Jie

Janssen, Volker

Jayarathna, Jayantha

Jayasekara, Rohana

Jeung, Dong

Kettaneh, Mohammad

Kolluru, Ravichandra

Kothalawala, Thanuja

Lai, Satish

Lee, Soo

Makin, Keith

Mohammed Aboobacker, Zakeer

Muhammad, Imran

Muhammad, Younus

Oosthuizen, George

Poleskiy, Anton

Rasheed, Haroon

Ratna, Gabriel

Rawal, Manish

Saidin, Ishara

Sarfraz Ahmed, Rashid

Sledge, Kenneth

Stone, Pamela

Te, Bert

Thomas, Michael

Tiwari, Purshottam

Tran, Trinh

Wong, Tat

Zackaria, Anvar

#### Provisional Associate

Fan, Chun

King, Damian

### Queensland Branch

#### Companion

Grimley, John

#### Member

Bustamante, Hugo

Cause, Grantley

Hollings, Sarah

McKeering, David

Pasumarty, Satyanarayana

#### Associate

Asby, Claire

Bekkeli, Roy

Chan, Tiffany

Chralowicz, Joshua

Colborne, Christopher

Kim, Do

Knack, Adrian

Marsh, Janelle

Mitchell, Stephen

Rose, Adam

Stormont, Jonathan

Tan, Alex

Tang, Bonnie

Tyson, Leigh

Williams, Edwina

Ye, Jing

#### Provisional Associate

Boyd, Andrew

Douglas, Evan

May, Lynette

#### Student

Bell, David

Gounder, Seema

Grech, Daniel

Hettiarachchi, Luvin

Isaksen, Luke

Johnston, Mathew

Mejia, Oscar

Ronalds, Luke

Sauve, Robert

Steer, Selby

Thonaprin, Nalini

Trenfield, Andrew

### South Australia Branch

#### Companion

Halley, Donald

#### Member

Cooper, Gregory

Dunemann, Michael

Fursenko, Frank

Kite, Stephen

Lehmann, Julie

Moore, Tom

Richards, Grant

Tran, Quyen

Ware, Trent

#### Associate

Floyd, Karen

Hayfa, Amir

Kaczor, Krzysztof

Russo, Nicole

Sabic, Adin

Wood, Michael

#### Provisional Associate

Ashworth, Keith

Croucher, John

Sharp, Jeffrey

#### Student

Harker, Lorraine

Hossain, Anwer

Li, Min

Li, Song

Paradowski, Michael

Phillips, Sharon

### Tasmania Branch

#### Member

Lilley, Peter

Spaulding, Stephen

#### Associate

Begosvich, Nicolay

Fenton, Joss

French, Philippa

Ralph, Matthew

#### Student

Kwok, Alvin

### Victoria Branch

#### Member

Abdul Razeed, Toby

Babbar, Sameer

Cornips, Stephan

Dudgeon, Graeme

Frinking, Martin

Jenkins, David

Lapham, Timothy

Le, Dzong

Legrand, Pierre

Machado, Gerard

Main, Ian

Mason, Monika

Muhita, Hunja

Nagar, Girish

O'Hanrahan, Martin

Park, Jordan

Pino, Tindaro

Rodger, Michael

Serna, Marvin





## Education across the Nation: 4th Quarter 2004

### ACS Professional Development Board

# NEW TECHNOLOGIES HARVESTING BUSINESS BENEFITS

**Presented by Linda Zeelie, EDS Lead Delivery Manager**

### About the Presentation

The evolution of technology has bought many business benefits.

Linda Zeelie's presentation will show that the key to unlocking business benefits lies not in having new technology or in being able to define the benefits required, but in the processes that surround the use of new technologies.

Linda will examine ways to use new advances in technology to deliver benefits including leveraged and agile models, accelerated development methodologies and off-shoring. As with all technological eras this one is not without its challenges.

This presentation will take a brief look at previous eras in order to characterise the new era, to identify the challenges we face and possible lessons to be learnt.

### About the Presenter

Linda Zeelie has 20 years experience in the IT industry and is currently a member of the management team with the EDS Adelaide Solution Centre. Her experience includes project management, software development, general management and quality management spanning a number of industry sectors including defence and related industries, justice, energy, banking and general consulting.

Her tertiary IT qualifications are complemented by accreditations as a PMI PMP and PRINCE 2 Foundation certified project manager, Leader Quality Auditor and a Certified Quality Analyst.

In Linda's current role as the Applications Services Manager she heads up the applications delivery component for a large commercial banking software program. In addition, Linda manages the Adelaide Solution Centre's 40 project managers as part of the Centre's Project Management Practice.



**An interactive evening forum  
FREE to ACS members.\***

|                 |             |
|-----------------|-------------|
| Adelaide.....   | October 27  |
| Brisbane**..... | November 10 |
| Perth.....      | November 16 |
| Sydney .....    | November 23 |
| Melbourne ..... | November 24 |
| Canberra .....  | November 25 |
| Hobart .....    | November 30 |
| Darwin .....    | December 6  |

\*\* Breakfast session

\*Please check with your local branch as non-member registration fees vary.

### What the participants learn:

- An understanding of the challenges faced in delivering business benefits using new technologies.
- Ways to use new technologies (techniques) to deliver business benefit.
- The focus and examples will be mainly from an application services perspective.

### Who should attend:

- IT Managers
- Project Managers
- Lead Technologies
- Applications and Systems Architects
- Business Analysts

**For further information contact your state branch, visit our website  
[www.acs.org.au](http://www.acs.org.au) or email [itprofessionals@acslink.net.au](mailto:itprofessionals@acslink.net.au)**

*ICT Professionals Shaping Our Future*



# What's Hot in ICT?

**As an IT professional you need an objective, accurate and concise source of information on key issues and trends.**

## **We need your help to get this right**

ACSLearn helps you learn about what's hot in ICT in areas such as strategy, governance, business value, security, technology, business processes, project management and interpersonal skills. It's an e-Learning initiative with short lessons that include additional links to more detailed objective information.

We've built a prototype of ACSLearn so we can get your feedback while we identify key issues, make decisions about publishing rights, access rights and operational processes plus generate more e-lessons.

### **Main Category**

#### **Business Processes**

### **Sample Topics**

Business Process Basics  
Business Process Management  
Customer Relationship Management  
Enterprise Content Management  
Supply Chain Management

#### **Project Management**

Agile Methods  
Business Cases

#### **Security Issues**

Biometrics  
Identity Management

#### **Strategy & Planning**

Business Models  
Compliance Challenge  
Business Value of IT  
"Does IT Matter?" Debate  
Strategy Maps  
IT Governance

#### **Technology**

Collaborative Software  
RFID

There's a full list of planned topics at our prototype ACSLearn site. We'll be adding new lessons during 2004-2005. Perhaps you would like to suggest a new topic and help us develop it? **Email us at [acslearn@acsvic.com](mailto:acslearn@acsvic.com)**

## **Please play with our prototype at [www.acs.openlab.net.au](http://www.acs.openlab.net.au)**

You'll find forums at the prototype site so you can give us your feedback.

### **We'd like to know:**

- Do you agree with the proposed main categories for lessons?
- There's a list of proposed topics within categories at the prototype – what's missing that you'd like to learn about?
- Are these lessons useful?
- Would you like to contribute lessons?
- Should all lesson contributors be ACS members?
- Should ACSLearn be for members only?

See what others think about these issues, and tell us what you think.

## **Benefits for ACS members**

- **Rapid access to knowledge**
- **Greater recognition in marketplace for ACS members**
- **Study companion throughout your career**
- **Current information when you need it**
- **Interact with your peers**



**ACSLearn keeps you on top of what's hot in ICT**